

Chemical and Biological Defense Program
FY 2002 RDT&E PROGRAM

EXHIBIT R-1

APPROPRIATION: 0400D Research, Development, Test & Eval, Defwide

Date: JUN 2001

Line No	Program Element Number	Item	Act	Thousands of Dollars			S E C
				FY 2000	FY 2001	FY 2002	
8	0601384BP	Chemical and Biological Defense Program	1	42,827	39,532	39,066	U
		Basic Research		42,827	39,532	39,066	
17	0602384BP	Chemical and Biological Defense Program	2	90,557	81,061	125,481	U
		Applied Research		90,557	81,061	125,481	
36	0603384BP	Chemical and Biological Defense Program - Advanced Development	3	44,705	59,905	69,249	U
		Advanced Technology Development		44,705	59,905	69,249	
78	0603884BP	Chemical and Biological Defense Program - Dem/Val	4	67,456	84,992	82,636	U
		Demonstration and Validation		67,456	84,992	82,636	
85	0604384BP	Chemical and Biological Defense Program - EMD	5	112,908	102,707	159,943	U
		Engineering and Manufacturing Development		112,908	102,707	159,943	
116	0605384BP	Chemical and Biological Defense Program	6	31,725	23,686	31,276	U
		RDT&E Management Support		31,725	23,686	31,276	
		Total Chemical and Biological Defense Program		390,178	391,883	507,651	

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**PE NUMBER AND TITLE
**0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC
RESEARCH)**

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
Total Program Element (PE) Cost		42827	39532	39066						
CB1	CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	8377	9068	5990						
TB1	MEDICAL BIOLOGICAL DEFENSE (BASIC RESEARCH)	26689	20563	23200						
TC1	MEDICAL CHEMICAL DEFENSE (BASIC RESEARCH)	7761	9901	9876						

A. Mission Description and Budget Item Justification: This program element (PE) funds the Joint Service core research program for chemical and biological (CB) defense (medical and non-medical). The basic research program aims to improve the operational performance of present and future Department of Defense (DoD) components by expanding knowledge in relevant fields for CB defense. Moreover, basic research supports a Joint Force concept of a lethal, integrated, supportable, highly mobile force with enhanced performance by the individual soldier, sailor, airman, or marine. Specifically, the program promotes theoretical and experimental research in the chemical, biological, medical, and related sciences. Research areas are determined and prioritized to meet Joint Service needs as stated in mission area analyses and Joint operations requirements, and to take advantage of scientific opportunities. Basic research is executed by academia, including Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs), and government research laboratories. Funds directed to these laboratories and research organizations capitalize on scientific talent, specialized and uniquely engineered facilities, and technological breakthroughs. The work in this program element is consistent with the Joint Service Nuclear, Biological, and Chemical (NBC) Defense Research, Development, and Acquisition (RDA) Plan. Basic research efforts lead to expeditious transition of the resulting knowledge and technology to the applied research (PE 0602384BP) and advanced technology development (PE 0603384BP) activities. This project also covers the conduct of basic research efforts in the areas of real-time sensing and diagnosis and immediate biological countermeasures. The projects in this PE include basic research efforts directed toward providing fundamental knowledge for the solution of military problems and therefore are correctly placed in Budget Activity 1.

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA1 - Basic Research

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC
RESEARCH)

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	44040	33197	30990	
Appropriated Value	44886	39897	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	0	0	
b. SBIR/STTR	-638	-279	0	
c. Omnibus or Other Above Threshold Reductions	-89	0	0	
d. Below Threshold Reprogramming	-862	0	0	
e. Rescissions	-470	-86	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	8076	
FY2002/2003 President's Budget	42827	39532	39066	

Change Summary Explanation:**Funding:**

FY02 - Increases to the technology base to accelerate the investigation and development of CBD technologies, support response to emerging threat requirements, and protect critical technology base infrastructure (CB1 \$2,500K; TB1 \$650K; TC1 \$352K). Increase to provide additional research on compounds that inhibit the activity of lethal toxins produced during anthrax infection (\$5,000K). General reduction to fund higher priority efforts (-\$624K) and increase for inflation assumptions (\$198K).

Schedule:**Technical:**

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**PE NUMBER AND TITLE
0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH) PROJECT
CB1

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
CB1	CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	8377	9068	5990						

A. Mission Description and Budget Item Justification:

Project CB1 CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH): This project funds basic research in chemistry, physics, mathematics, life sciences, and fundamental information in support of new and improved detection technologies for biological agents and toxins; new and improved detection technologies for chemical threat agents; advanced concepts in individual and collective protection; new concepts in decontamination; and information on the chemistry and toxicology of threat agents and related compounds.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

CB1**FY 2000 Accomplishments:**

- 800 Biosensors - Synthesized purified aptamer (deoxyribonucleic acid/DNA oligomer) recognition elements for the detection of Bacillus anthracis (anthrax) and Yersinia pestis (plague). Completed conjugate synthesis and integration of specific fluorescent polymer/binding agent complexes for these agents. Completed synthesis of antibody/dendrimer tag complexes and began work on the demonstration of separation/identification of dendrimer bound antibody/antigen couples via capillary electrophoresis.
- 320 Aerosol Science - Initiated laboratory experiments to validate new backscattering theorem projections. Made adjustments to the computer code.
- 1123 Chemistry and Toxicology of Bioactive Compounds - Demonstrated methodology for cytotoxicity screening for toxicological evaluations and transitioned to the toxicology program. Made a selection of the coating technology to be used in the molecular imprinting technique. Expanded rate studies on the percarbonate (candidate peroxide) based decontaminant formulation to include work with surety materials. Investigated other methods of peroxide activation with promise for greater percent hydrogen ion (pH) range efficacy. Began project to create a filtration performance model based upon an understanding of adsorption equilibria and rate processes. Began development of data base of adsorption equilibrium measurements. Began project to study pharmacokinetics and pharmacodynamics of novel threat materials.
- 3307 Thin Film Technology Development - Continued development and refinement of semiconductor metal-oxide (SMO) thin film technology with controlled architecture to detect chemical agents (e.g. nerve, blister, blood) and interferent species (e.g. volatile hydrocarbons, water, and other battlefield interferents) as dictated by Joint Service requirements. Developed and optimized films for both point and cumulative exposure detection applications. Conducted laboratory testing to optimize the sensitivity, selectivity, and stability of SMO sensor elements and arrays as a function of gas environments.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

CB1**FY 2000 Accomplishments (Cont):**

- 1911 Integrated Detection of Energetic and Hazardous Materials - Conducted a multidisciplinary project which developed integrated detection methodologies for sensing the presence of chemical and biological warfare agents. This effort consisted of the following sub-tasks: ion trap mass spectrometry analytical techniques, micro-sensors for chemical and biological warfare agents, and bioanalytical detection.
- 916 Optical Recognition Technologies - Investigated improved and more cost-effective techniques for the recognition of chemical agents in the atmosphere. Chemometrics were used to design sophisticated multi-layered optical filters which have been tested against simulants and interferents.

Total 8377

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

CB1**FY 2001 Planned Program:**

- 807 Biosensors - Sequence and synthesize DNA aptamer recognition elements to Staphylococcal enterotoxin B. Complete conjugate synthesis and integration of specific DNA/fluorescent poly mer conjugates. Demonstrate separation and identification of dendrimer bound antibody/antigen couples via capillary electrophoresis.
- 437 Aerosol Science - Complete validation of the scattering model theorem by demonstrating imaging of biological cluster particles.
- 1120 Chemistry and Toxicology of Bioactive Compounds - Continue materials selection for molecular imprinting technique in preparation for integration into a passive thin film chemical detection badge. Continue studies of the percarbonate based decontaminant formulations by determining reaction product distributions and correlate equilibrium concentrations with solvent properties. Complete measurement of requisite adsorption rate data and begin development of a continuous adsorption model for filter performance. Continue project to understand the toxicological mechanisms of one or two members of a class of potential new threat agents.
- 1658 Thin Film Technology Development - Continue development of semiconducting metal oxide (SMO) thin film technology to detect chemical agents. Seek to minimize power requirements, weight, and volume with an overall intent to reduce burden to the individual user. Focus on approaches to maximize selectivity/elimination of false alarms including mixed metal oxide films and nanocluster structures. Examine prefiltration/preconcentration through chemical vapor deposition (CVD) methods. Continue improvements in signal processing and control.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH) CB1**FY 2001 Planned Program (Cont):**

- 4892 Chemical/Biological Agent Detection - Conduct a multidisciplinary project to establish the proof of principle for detection methodologies and to develop detection systems for sensing the presence of chemical and biological warfare (CBW) agents. Investigate development of a small-scale experimental detector for point detection of chemical warfare (CW) agents. Produce a design for a point detector to achieve highly specific and rapid detection of the CW agents in air using Ion Trap Mass Spectrometry (ITMS). This extremely sensitive type of mass spectrometer is particularly promising for in situ applications because of its small size and weight. Research using ITMS methodologies for the point detection of biological warfare (BW) agents will be conducted. Investigate neutron based CW detection.

- 154 SBIR

Total 9068**FY 2002 Planned Program:**

- 2000 Biosensors - Sequence Venezuelan Equine Encephalitis (VEE) aptamers and incorporate all available aptamers into Multiplex Electronic/Photonic Sensor (MEPS). Conduct optimization and assess miniaturization potential of the capillary electrophoresis detection system and validate concept.
- 1550 Chemistry and Toxicology of Bioactive Compounds - Construct "film badge" package to be used in the molecular imprinting technique for Individual Passive Chemical Agent Technologies and complete validation of concept for potential transition into 6.2 development. Conduct determination of rate laws for other organic oxidations using the new peroxide-based decontamination formulations. Complete development and validate filter model incorporating adsorption equilibria and dynamic behavior. Initiate a project to model filter performance concepts for individual protection systems. Expand pharmacokinetic and pharmacodynamic investigation to include additional new threat materials.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

CB1

FY 2002 Planned Program (Cont):

- 2440 New Detection Technologies - Initiate research on methods of combining chemical and biological agent detection on surfaces into one device. Include a variety of spectroscopic techniques focusing on portions of the electromagnetic spectrum not previously utilized for Chemical and Biological (CB) agent detection.

Total 5990

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DATE
June 2001BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA1 - Basic ResearchPE NUMBER AND TITLE
0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)
PROJECT TB1

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
TB1	MEDICAL BIOLOGICAL DEFENSE (BASIC RESEARCH)	26689	20563	23200						

A. Mission Description and Budget Item Justification:

Project TB1 MEDICAL BIOLOGICAL DEFENSE (BASIC RESEARCH): This project funds basic research on the development of vaccines and therapeutic drugs to provide effective medical defense against validated biological threat agents including bacteria, toxins, and viruses. This project also funds basic research employing biotechnology to rapidly identify, diagnose, prevent, and treat disease due to exposure to biological threat agents. Categories for this project include current Science and Technology Plans (STEP) in medical biological defense (diagnostic technology, bacterial therapeutics, toxin therapeutics, viral therapeutics, bacterial vaccines, toxin vaccines, and viral vaccines) and directed research efforts (laboratory -based and analytical threat assessment research and anthrax studies).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

TB1**FY 2000 Accomplishments:**

- 4855 Diagnostic Technologies - Identified alternative immunological targets and gene sequences for Bacillus anthracis (B. anthracis), Yersinia pestis (Y. pestis), Francisella tularensis (F. tularensis), Brucella spp., alphaviruses, filoviruses, and botulinum toxins that will enhance the depth and diversity of the current capability. Identified rapid medical specimen processing approaches compatible with portable nucleic acid identification of biological threat agents that will improve post-exposure treatment and force protection. Assessed biotechnical innovations such as the development of molecular probes and recombinant antibodies and antigens to provide rapid diagnostic capabilities that support enhanced warfighter medical care and force protection.
- 1531 Therapeutics, Bacterial - Established and validated a method for determining antibiotic susceptibilities for biological warfare (BW) agents to accepted international standards; evaluated 28 antibiotics on 11 strains of Burkholderia mallei (B. mallei) (causative agent of glanders), and one strain of B. anthracis to identify the most effective compounds; established agreements to test 15 additional novel (investigational) antibiotics developed by outside drug companies.
- 3282 Therapeutics, Toxin - Identified molecular biology and target mechanisms of action of botulinum toxin and staphylococcal enterotoxin (SE) for exploitation in investigating therapeutic approaches to toxin exposure. Performed structural studies for toxins and critical enzymes using x-ray crystallography and other cutting-edge analytical methodologies. Developed and refined computational chemistry techniques for use in screening massive chemical databases for compounds as potential inhibitors of toxin activity. Developed biosensor-based method to measure SE-receptor interactions for screening inhibitory molecules. Developed recombinant, enzymatically active light chain for botulinum toxin serotype A as a reagent for efforts focused on therapeutic countermeasures to botulinum neurotoxins. Demonstrated host chaperone protein, SNAP-25, could be replaced with a botulinum-resistant version in vitro, using DNA technologies. Initiated efforts to evaluate the anaerobic bacterial origins of saxitoxin.
- 2564 Therapeutics, Viral - Investigated mechanisms of Ebola and Marburg virus pathogenesis in nonhuman primate models for potential targets for therapeutic intervention; defined apoptosis as the mechanism for lymphocyte death.

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**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

**0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC TB1
RESEARCH)**

PROJECT

FY 2000 Accomplishments (Cont):

- 3487 Vaccines, Bacterial - Identified an expression system for multivalent Brucella vaccine; continued studying pathogenesis, host immune responses, virulence factors, strain diversity, molecular pathogenesis, and correlates of immunity for organisms responsible for plague *Y. pestis*, glanders (*B. mallei*), and anthrax (*B. anthracis*). Refined and optimized aerosol exposure animal models for glanders required to address Food and Drug Administration (FDA) regulatory requirements.
- 2608 Vaccines, Toxin - Completed in vitro experiments establishing delivery of recombinant vaccines using mouse mesenchymal stem cells that differentiate into antigen presenting cells in vivo. Established mouse/human CD4 and human leukocyte antigen (HLA)-DR1, DR3, DQ6, and DQ8 transgenic colonies in class II-deficient mice. Showed that the lymphocytes obtained from the humanized mice and humans reacted similarly to various BW agents. Initiated mucosal immunization studies using *Streptococcus gordonii*, cholera toxin, and hepatitis virus-like particles as delivery platforms.
- 1609 Vaccines, Viral - Demonstrated and defined the protective contribution of antibody specific for Ebola virus glycoproteins in the mouse model. Defined immunogens (glycoprotein and nucleocapsid protein) that induce protection against Musoke isolate of Marburg virus in animal models and that can serve as vaccine antigens.

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**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

TB1**FY 2000 Accomplishments (Cont):**

- 6753 Laboratory-based and Analytical Threat Assessment Research - Expanded earlier investment between DoD, Department of Energy (DOE) and academia in development of a genetic information database for threat agents to greater than 100,000 agent records. Merged database with DOE efforts, and created tools and access for secure website use by key customers. Initiated development of a proteomics-based system for identifying novel threats based on structural motif. Initiated pathophysiology studies to determine the molecular basis for virus transmission of mosquito-borne agent Venezuelan equine encephalitis (VEE) and evaluated real-time imaging of other biological threat agents in hosts. Assessed aerosol threat posed by selected components of snake toxin. Developed new assays to detect brevetoxins and genetically modified (engineered) superantigen toxins. Demonstrated concept of using serum peptide patterns as a marker of host infection with specific threat agents and performed molecular fingerprint analyses of Brucella and Yersinia strains. Initiated basic studies of the common structural motifs of staphylococcal and streptococcal superantigens. Identified common mechanisms of macrophage infection by bacterial pathogens and host lymphocyte gene response patterns to VEE viruses. Evaluated host cellular gene response profiles following infection with Yersinia and administration of streptococcal pyrogenic exotoxins.

Total 26689

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

TB1**FY 2001 Planned Program:**

- 3014 Diagnostic Technologies - Investigate new medical diagnostic technologies based upon state-of-the-art biotechnological approaches for the enhanced recognition of infections by validated biological threats (bacteria, viruses, and toxins) of military interest.
- 316 Therapeutics, Bacterial - Study host cellular and subcellular responses to BW threat agents (B. anthracis, B. mallei, Y. pestis) exposure to identify likely molecular targets for intervention by "next generation" (i.e., beyond present day) novel therapeutic strategies; evaluate possible generic intervention points in agent-induced pathophysiology. Assess broad-spectrum therapeutic strategies for exposures to multiple BW threat agents. These strategies will focus on intervention in disease pathogenesis at the molecular level and identify common host cellular targets for the pathogenic response. Develop methodologies utilizing biochemical (metabolic) processes for assaying in vivo antibiotic activity. Develop infection models in rodent species to evaluate antibiotic therapeutic indices.
- 5522 Therapeutics, Toxin - Identify sites of molecular action and mechanisms of intervention for therapies for botulinum toxin and SE threats; develop models for therapeutic intervention. Define endpoints for in vivo assessment of efficacy of therapeutic intervention for botulinum toxin and SE and surrogate endpoints of human clinical efficacy. Initiate high-output generation of candidate therapeutic moieties for botulinum and SE toxins using combinatorial chemistry.
- 2757 Therapeutics, Viral - Humanize mouse monoclonal antibodies specific for Ebola virus to test as an immunotherapeutic. Investigate mechanisms of filovirus transcription and replication focusing on polymerase as potential target for antiviral therapy.
- 4712 Vaccines, Bacterial - Investigate pathogenesis (cellular and molecular) and host immune responses; characterize additional virulence factors; define strain diversities; establish correlates of immunity for plague (Y. pestis), glanders (B. mallei), and anthrax (B. anthracis).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

**0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC TB1
RESEARCH)**

PROJECT

FY 2001 Planned Program (Cont):

- 995 Vaccines, Toxin - Initiate studies to identify potential neutralizing epitopes in the translocation domains of the botulinum neurotoxins. Investigate the variability of clostridium botulinum strains in terms of their neurotoxic isoforms and the presence of other toxins produced by various strains. Initiate structural and biophysical characterization studies of recombinant protein vaccines antigens. Construct enzymatically inactivated mutant of ricin A-chain for evaluation as a potential vaccine candidate. Initiate evaluation of adjuvants that may enhance the host immune response to aerosol-administered vaccines and assess delivery vehicles that may enhance the uptake of aerosol-administered vaccines.
- 2899 Vaccines, Viral - Determine the role of cytotoxic T cells in conferring protection against Ebola virus in the mouse model. Investigate poxvirus immunity to determine if it is feasible to replace vaccinia immune globulin (VIG) with monoclonal antibodies and to construct a safe and effective vaccine to replace the vaccinia virus vaccine for variola.
- 348 SBIR

Total 20563**FY 2002 Planned Program:**

- 3557 Diagnostic Technologies - Continue investigating new medical diagnostic technologies based upon state-of-the-art biotechnological approaches for the enhanced recognition of infections by potential biological threats (bacteria, viruses, and toxins) of military interest.
- 1130 Therapeutics, Bacterial - Evaluate therapeutic indices for new (investigational) antibiotic agents identified by in vitro assays in suitable animal models. Study the effect of immunomodulators on the host response to B. mallei and Y. pestis candidate vaccines; identify those modulators that are effective in enhancing candidate vaccines.

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

**0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC TB1
RESEARCH)**

PROJECT

FY 2002 Planned Program (Cont):

- 4874 Therapeutics, Toxin - Refine and standardize in vivo screening models for assessment of efficacy of therapeutic intervention in botulinum toxin and SE intoxication and standardize in vitro assays for neutralizing activity of lead inhibitors. Conduct high-output generation of candidate therapeutic moieties for botulinum and SE toxins using combinatorial chemistry. Evaluate inhibitor delivery strategies and demonstrate in vitro proof-of-concept. Begin high-throughput screening technology to investigate therapeutic candidates for exposure to ricin toxin.
- 2259 Therapeutics, Viral - Determine the therapeutic potential of candidate drugs for treatment of disease for filovirus or orthopox infections. Characterize filovirus polymerases as potential antiviral drug targets and incorporate into in vitro assays.
- 3200 Vaccines, Bacterial - Obtain genetic sequencing data from a panel of validated threat agents; establish genetic sequences into a database; evaluate sequence data for the potential for genetic engineering and genetic modification of the pathogens; determine genetic fingerprints (genetic identifiers) of various isolates of the organism responsible for plague (*Y. pestis*), glanders (*B. mallei*), and anthrax (*B. anthracis*). Evaluate genetically modified strains of *Y. pestis*, *B. mallei*, and *B. anthracis* for their level of virulence in animals. Identify genes from *Y. pestis*, *B. mallei*, and *B. anthracis* that encode for novel virulence factors. Expand and characterize strain collections of bacterial threat agents; identify strains of various agents that may be resistant to existing vaccines and/or those under advanced development.
- 1590 Vaccines, Toxin - Complete experiments involving the crystallization of vaccine candidates for structural studies and biophysical characterization of vaccines and toxins. Complete assessment of novel adjuvants and delivery vehicles for aerosol-administered vaccines.
- 1590 Vaccines, Viral - Continue investigating poxvirus immunity to determine if it is feasible to replace VIG with monoclonal antibodies and to construct a safe and effective vaccine to replace the vaccinia virus vaccine for variola.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

**0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC TB1
RESEARCH)**

PROJECT

FY 2002 Planned Program (Cont):

- 5000 Anthrax studies - Initiate development and testing of new approaches for the treatment of inhalational anthrax. Focus will be placed on two classes of compounds that inhibit the activity of the lethal toxin produced during anthrax infection and on a novel enzyme target, NAD synthetase, which is critical for the germination and vegetative life cycle of Bacillus anthracis.

Total 23200

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June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**PE NUMBER AND TITLE
**0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC TC1
RESEARCH)** PROJECT
TC1

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
TC1	MEDICAL CHEMICAL DEFENSE (BASIC RESEARCH)	7761	9901	9876						

A. Mission Description and Budget Item Justification:

Project TC1 MEDICAL CHEMICAL DEFENSE (BASIC RESEARCH): This project emphasizes understanding of the basic action mechanisms of nerve, blister (vesicating), blood, and respiratory agents. Basic studies are performed to delineate mechanisms and site of action of identified and emerging chemical threats to generate required information for initial design and synthesis of medical countermeasures. In addition, these studies are further designed to maintain and extend a science base. Categories for this project include Science and Technology Plans (Pretreatments, Therapeutics, and Diagnostics) and directed research efforts (Low Level Chemical Warfare Agent Exposure).

FY 2000 Accomplishments:

- 3673 Pretreatments - Developed necessary knowledge for molecular modeling and site-directed mutagenesis to optimize next generation pretreatments to nerve agent poisoning. Began efforts to establish source for BuChE. Investigated intervention points for potential for pretreatment of vesicant exposures.
- 1698 Therapeutics - Explored potential for new technologies to intervene or serve as biomarkers in the mustard injury cascade. Identified 12 oximes that are superior to 2-PAM for efficacy against Fourth Generation Agents.
- 2390 Low Level Chemical Warfare Agent Exposure - Initiated mechanistic studies of nerve agent toxicity at low doses. Continued building a scientific database relevant to the underlying pathological effects of low level exposures to nerve agents. Identified information gaps in nerve agent exposures.

Total 7761

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**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

TC1**FY 2001 Planned Program:**

- 2619 Pretreatment - Evaluate catalytic scavengers designed by site-directed mutagenesis. Develop candidate next generation pretreatments using knowledge gained from studies in molecular modeling and site-directed mutagenesis. Identify new candidate compounds with potential as pretreatment for vesicant injury based on current research strategies.
- 1443 Therapeutics - Develop science base to identify specific factors leading to and/or preventing neuronal death in status epilepticus caused by nerve agents. Identify potential synergistic interactions of midazolam with anticholinergic drugs in rodent species. Define the optimal hypochlorite concentration for use in decontaminating chemical agent-exposed skin and agent-contaminated wounds.
- 4164 Low Level Chemical Warfare Agent Exposure - Begin filling identified data gaps on the pathological and behavioral effects of low level chemical warfare nerve agent exposures. Investigate possible cellular mechanisms of low level chemical warfare agent injury. Develop highly sensitive, forward deployable diagnostic techniques to determine exposure to low levels of CW agents and subsequent physiological and toxicological effects.
- 1507 Fourth Generation Agents - Determine mechanism by which Fourth Generation Agents produce toxicity that is not responsive to current nerve agent countermeasure pretreatments using knowledge gained from studies in molecular modeling and site-directed mutagenesis.
- 168 SBIR

Total 9901

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**RDT&E DEFENSE-WIDE/
BA1 - Basic Research**

PE NUMBER AND TITLE

0601384BP CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)

PROJECT

TC1**FY 2002 Planned Program:**

- 2819 Pretreatments - Evaluate organophosphate anhydrolase for potential use as catalytic scavenger. Continue efforts to identify compounds for potential use as pretreatments for vesicant exposure.
- 1557 Therapeutics - Identify target sites for neuroprotection. Identify therapeutic targets for candidate compound combination therapies.
- 4500 Low Level Chemical Warfare Agent Exposure - Continue studies on identification of chronic pathological and behavioral effects of low level chemical warfare agent exposures. Investigate putative mechanisms of low level toxicity. Develop consensus for a coherent methodology for studies across endpoints and model species to permit integration of disparate endpoints, post-hoc analysis of research results, and extrapolation to nonhuman primate models.
- 1000 Fourth Generation Agents - Develop strategies to improve efficacy of current medical countermeasures against Fourth Generation Agents. Transition program to applied research.

Total 9876

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DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**PE NUMBER AND TITLE
**0602384BP CHEMICAL/BIOLOGICAL DEFENSE (APPLIED
RESEARCH)**

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Program Element (PE) Cost	90557	81061	125481							
CB2 CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	54117	43717	70156							
TB2 MEDICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	23370	23107	36729							
TC2 MEDICAL CHEMICAL DEFENSE (APPLIED RESEARCH)	13070	14237	18596							

A. Mission Description and Budget Item Justification: The use of chemical and biological weapon systems in future conflicts is an increasing threat. Funding under this PE sustains a robust program, which reduces the danger of a chemical and/or biological (CB) attack and enables U.S. forces to survive and continue operations in a CB environment. The medical program focuses on development of vaccines, pretreatment and therapeutic drugs, and on casualty diagnosis, patient decontamination, and medical management. In the non-medical area, the emphasis is on continuing improvements in CB defense materiel, including contamination avoidance, decontamination, and protection systems. This program also provides for conduct of applied research in the areas of real-time sensing and immediate biological countermeasures. The work in this PE is consistent with the Joint Service NBC Defense Research, Development, and Acquisition (RDA) Plan. Efforts under this PE transition to and provide risk reduction for Advanced Technology Development (PE 0603384BP), Demonstration/Validation (PE 0603884BP), and Engineering and Manufacturing Development (PE 0604384BP). This project includes non-system specific development directed toward specific military needs and therefore is correctly placed in Budget Activity 2.

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DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA2 - Applied Research

PE NUMBER AND TITLE

0602384BP CHEMICAL/BIOLOGICAL DEFENSE (APPLIED
RESEARCH)

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	97400	73600	83185	
Appropriated Value	99280	80000	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	-560	0	
b. SBIR/STTR	-1409	0	0	
c. Omnibus or Other Above Threshold Reductions	-4697	0	0	
d. Below Threshold Reprogramming	-1587	1800	0	
e. Rescissions	-1030	-179	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	42296	
FY2002/2003 President's Budget	90557	81061	125481	

Change Summary Explanation:**Funding:**

FY02 - Increases to the technology base to accelerate the investigation and development of CBD technologies, support response to emerging threat requirements, and protect critical technology base infrastructure (CB2 \$33,443K; TB2 \$7,097K; TC2 \$3,075K). General reduction to fund higher priority efforts (-\$1,931K) and increase for inflation assumptions (\$612K).

Schedule:**Technical:**

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**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**PE NUMBER AND TITLE
**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**PROJECT
CB2

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
CB2 CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	54117	43717	70156							

A. Mission Description and Budget Item Justification:

Project CB2 CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH): This project addresses the urgent need to provide all services with defensive materiel to protect individuals and groups from threat chemical-biological (CB) agents in the areas of detection, identification and warning, contamination avoidance via reconnaissance, individual and collective protection, and decontamination. The project provides for special investigations into CB defense technology to include CB threat agents, operational sciences, modeling, CB simulants, and nuclear, biological, chemical (NBC) survivability. This project focuses on horizontal integration of CB defensive technologies across the Joint Services. The Defense Technology Objectives (DTOs) provide a means to shape the development of selected technologies within this project.

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BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2000 Accomplishments:**

- 728 Biological Point Detection - Completed array and fluidics hardware for the antibody based force differentiation assay (FDA). Demonstrated FDA sensor sensitivity enhancement of 100 fold using ultra filtration membrane. Initiated automation of sample preparation for FDA. Initiated joint effort with DOE CB Non-Proliferation Program to collect ambient background data from multiple U.S. and international sources into a single database and initiated analysis of data.
- 858 Biological Early Warning Detection - Initiated effort to enhance reliability (false detection reduction) and increase discrimination capability of optical analyzers by adding shape/size analysis. Initiated examination of pyrolysis-gas chromatography-ion mobility spectrometry (Py-GC/IMS) as technology to provide improved biological discrimination for early warning and system triggering functions. These approaches are candidate technology solutions for implementation in arrayed detector networks and stand-alone configurations.
- 1409 Biological Genetic Technology - Completed assessment of revised human superlibrary as an approach to recombinant antibody development. Developed recombinant antibody assays for several high priority agents; demonstrated performance exceeds currently available monoclonal antibodies. Initiated evaluation of combinatorial peptides as alternative recognition molecules. Transitioned successful antibodies to Critical Reagents Program for validation.
- 920 Chemical Early Warning Detection - Initiated feasibility studies to develop concepts for use of non-traditional chemical biological (disparate) sensors to cue for early warning.
- 2800 Chemical Point Detection - Completed market survey and downselection of technology for the detection of contaminants in potable water systems (water monitor). Initiated design and build of breadboard for water monitor.
- 1959 Chemical Imaging Sensor (DTO) - Demonstrated a 16-pixel spectrometer operating at 100 Hz with offline processing of data. This speed represents a factor of 20 improvement over current developmental systems.
- 2309 Scanning Airborne Fourier Emission for Gaseous Ultraspectral Analysis & Radiometric Detection (SAFEGUARD) - Upgraded sensors and initiated software and airborne platform integration.

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PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2000 Accomplishments (Cont):**

- 4897 Collective Protection - Conducted side-by-side testing of candidate residual life indicator (RLI) sensors with simulants, and initiated agent testing. Initiated testing of candidate immobilized bed materials to identify the critical properties of those materials. Measured breakthrough and equilibrium data of selected Toxic Industrial Chemicals (TICs). Evaluated candidate adsorbents for use in regenerative filtration applications. Conducted a downselect of best low cost tentage materials. Produced and evaluated a prototype shelter fabricated of the best candidate materials and seals. Transitioned the low cost tentage effort to the Joint Transportable Collective Protection System (JTCOPS) Block I.
- 1747 Individual Protection - Completed a front-end analysis (FEA) and prepared a master plan for individual protection to help focus investment in technologies. Completed the computational fluid dynamics model of the mass/energy transport through protective clothing. Determined dominant factors controlling high permselectivity from membrane structural and chemical studies. Completed a comparison of the finite element/computational fluid dynamic analysis model and the thermal mannequin results. Assessed the ability of nano-fibers to reduce aerosol penetration when applied to the outer-surface of a permeable protective garment. Blended catalysts (enzyme organophosphorus acid anhydrolase) and reactive oxides (MgO) with polymers, and evaluated their efficacy as decontaminants. Evaluated improved seals and closures employed in garment developed under the Advanced Lightweight CB Protection (DTO). Updated and finalized the respiratory encumbrance model. Evaluated integrated near-term mask/helmet concepts for interface and human factors. Completed the evaluation of the Joint Service Aviation Mask (JSAM) early prototype and developed design guidelines. Surveyed technologies and developed initial concepts for application to mask filter end of service life indicators.
- 620 Advanced Lightweight CB Protection (DTO) - Evaluated final concept garment using thermal mannequin, Man In Simulant Test (MIST), and field tests. Potential short-term transitions include JAM (JSLIST Approved Material) Alternate Source Qualification (ASQ) and the Joint Service Protective Aircrew Ensemble (JPACE). The Joint Chemical Ensemble, Block II is the mid-term application of the technology.

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PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2000 Accomplishments (Cont):**

- 5038 Man-portable Detectors - Developed and optimized polymer coated surface acoustic wave (SAW) and chemiresistive conducting devices which are sensitive and selective to nerve, blister, and blood agent simulants as well as toxic industrial chemicals. Developed impedance and fluorescence-based biosensors employing immunological and DNA detection probes. Integrated hybrid sensor array devices and electronics, neural networks, and other data acquisition and display hardware/software into a prototype detection system for chemical agents. Demonstrated an integrated prototype detector system for CBW agents and toxic industrial chemicals (TIC) under laboratory and field conditions. These efforts were directed toward development of a man transportable detector with low power and no field maintenance requirements.
- 2061 Low Level Chemical Agent Operational Studies - Completed baseline for comparison of historical data for sarin on rats using new methodology and collected data using extended six-hour exposure times with lethality as the endpoint. Initiated planning for determining the potency ratio of the second-generation nerve agents using sarin as the basis. Initiated planning for miosis threshold studies for sarin over extended exposure durations. Initiated planning for multi-species animal studies for toxicological effects of extended exposure duration at low concentrations to validate and verify alarm and warning levels for detector systems.
- 1821 Integrated Detection of Energetic and Hazardous Materials (IDEHM) - Developed integrated detection systems for sensing the presence of CBW agents and explosives utilizing the following technology approaches: ion trap mass spectrometry hardware miniaturization, electromagnetic detection (short range standoff detection of explosives), neutron based detection, and bioanalytical methodologies.
- 930 Advanced Adsorbents for Protection Applications (DTO) - Completed the screening of candidate adsorbent materials for the Joint Service General Purpose Mask (JSGPM). Investigated the effect of carbon fiber and particle size variations on filter bed performance. Initiated investigations of candidate advanced adsorbent materials for protection against TICs.

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BA2 - Applied Research**

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**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2000 Accomplishments (Cont):**

- 2994 Biological Sample Preparation System (BSPS) (DTO) - Initiated efforts to develop fully automated two cu ft BSPS concept breadboard coupled with genetic detection sensor and electrospray mass spectrometer. Developed gene-based assays for the Joint Field Trials (JFT). Initiated development of mass spectrometry database for JFT.
- 826 Decontamination (DTO) - Improved enzyme activity on V-agents (persistent nerve agent) 10 fold. Achieved 5-10 fold improvement in production of nerve agent enzymes. Initiated a materials technology approach to HD (mustard) hydrolysis utilizing hyperbranched dendrimeric polymers. The materials were found to be successful in accomplishing hydrolysis of HD in the presence of enzymatic moieties utilized for the decontamination of nerve agents. Initiated new application systems based on emulsions and microemulsions.
- 5038 Decontamination - Incorporated solid adsorbents into the supercritical fluid and non-ozone depleting fluorocarbon solvent systems being developed for sensitive equipment decontamination in order to capture and neutralize removed chemical agents. Demonstrated the validity of the techniques for technical transfer into the Joint Service Sensitive Equipment Decontamination System (JSSED) Block I development program. Performed Front End Analysis (FEA) to identify optimal candidate JSSED Block I technologies. Identified promising approaches to solve JSSED Block II and Block III requirements, such as thermal processes and spot-cleaning technologies. Initiated a new decontamination approach based on oxidative processes. Continued on-going efforts using microemulsions with peracid oxidants. Initiated a further study in the material technology area to expand the capacity of hyperbranched dendrimeric systems based on mono-ethanolamine to perform decontamination operations. Continued efforts in zeolites and high surface area reactive solids as part of the next generation of solid decontaminants. Expanded the scope of this area to include novel reactive nano-particle technology. Conducted studies directed at determining the fate of agents adsorbed on surfaces commonly found at fixed site facilities.

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**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2000 Accomplishments (Cont):**

- 2454 Supporting Science and Technology - Identified and technically evaluated emerging chemical threat agents. Designed quantitative toxic powder aerosol generator for use in the first and only U.S. nose-only exposure chamber with adequate containment for studying high-risk (no antidote) chemical aerosol substances. Measured quantitative performance of developmental aerosol collectors and their inlets to establish baseline metrics for future improvements. Initiated design of an advanced aerosol collector using mini-scale-manufacturing technology. Provided controlled biosimulant aerosol challenges for Joint Service, Defense Advanced Research Projects Agency (DARPA), and Department of Energy (DOE) experimental equipment in preparation for the Joint Field Trials (JFT).
- 2816 Modeling and Simulation - Developed High-Level Architecture (HLA) compliant version of Nuclear, Chemical, Biological, and Radiological (NCBR) Simulator for application in Simulation Based Acquisition (SBA) for Joint Service CB defense equipment, and demonstrated capability to support several hardware development programs in distributed simulations of military worth evaluations. Completed Version 3 of the Vapor, Liquid and Solid Tracking (VLSTRACK) Model, which includes the advanced secondary evaporation methodology for chemical agents and the capability to ingest full resolution mesoscale meteorological data fields to more accurately drive atmospheric dispersion. Transitioned coupled CB environment/meteorological model for use with forward-deployed weather forecast operations in Navy's Tactical Environmental Support System (TESS). Demonstrated Initial Operational Capability (IOC) of the Simulation, Training, and Analysis for Fixed Sites (STAFFS) model for simulation of Chemical and Biological Warfare (CBW) effects on operations at a fixed site (AF fighter base).

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0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)

PROJECT

CB2

FY 2000 Accomplishments (Cont):

- 11892 Chemical and Biological (CB) Countermeasure Initiatives - Initiated a broad CB countermeasures program to enhance ability to recognize, prevent, respond to, mitigate, and recover from a CB terrorist incident. Initiated a systems approach to quickly simulate chemical and biological agent dispersal in an urban environment. Modeled the scavenging, degradation, and deposition of CB contaminants in the urban environment. Developed Weapons of Mass Destruction (WMD) supplements to existing healthcare facility plans for biological warfare (BW) events. Initiated program to apply novel biological approaches to quickly develop vaccines and antidotes against selected BW agents. Investigated combinative toxicology of bio toxin mixtures. Developed high affinity antibodies to Yersinia pestis (plague). Developed aptamers with high affinity binding for Ricin A and B. Developed signaling aptamers for optical signal transduction. Engineered hyperstable antibodies that can be stored for months. Initiated program to standardize CB medical databases and communication protocols involved in planning for and response to a CB terrorist attack. Initiated program to integrate various and disparate CB sensor inputs into a central database. Initiated automated database to provide early detection of a CB attack. Developed biosensor assays for rapid detection of microbial pathogens and toxins associated with food and water. Developed base for rapid antibody optical BW sensor. Developed non-woven CB protective clothing with enhanced protection and comfort. Developed rapid methods to perform large surface CB decontamination.

Total 54117

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(APPLIED RESEARCH)**

PROJECT

CB2**FY 2001 Planned Program:**

- 1648 Biological Point Detection - Complete analysis of accumulated ambient background data and identify gaps for further study as indicated by analysis. Continue generation and screening of recombinant antibodies against select bio agents using biased genetic libraries. Incorporate into Enzyme Linked Immuno Sorbent Assay (ELISA) and biosensors for test/evaluation, and transition best candidates to Critical Reagents Program.
- 319 Biological Standoff Detection (DTO) - Initiate analysis of existing data to identify top candidates for further evaluation to provide improved biological standoff capability. Identify and develop key performance requirements to develop biological standoff capability.
- 2050 Chemical Imaging Sensor (DTO) - Demonstrate a 16-pixel spectrometer in real-time operation at 100 Hz (on-line process of data). This capability will represent the first time use of high performance computers for real-time on-line processing for this application. System will also be capable of being mounted on platforms with objective speeds in excess of 1,000 miles per hour with an imaging capability.
- 2050 Collective Protection - Conduct a Front-End Analysis (FEA) and prepare a Master Plan (MP) for developing integrated NBC protection systems. The FEA/MP will identify and prioritize various DoD user community requirements for Collective Protection. Various filtration and shelter technology approaches will be identified, categorized and prioritized in terms of maturity, risk, applicability, and cost. Complete RLI sensor side-by-side testing. Complete simulant, TIC, and agent testing of candidate sensors. Produce and test immobilized beds for selected applications using optimized materials and processes. Complete the measurement of breakthrough and equilibrium data of current adsorbents against TICs and assess adsorptive/chemisorptive properties. Conduct lab scale testing to validate the Pressure Swing Adsorption model and to help in optimizing the bed/system performance of regenerative filtration systems. Produce and evaluate optimized hermetic seals for shelters, and transition to Joint Transportable Collective Protection System (JTCOPS-Block I).

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(APPLIED RESEARCH)**

PROJECT

CB2**FY 2001 Planned Program (Cont):**

- 2750 Biological Sample Preparation System (BSPS) (DTO) - Demonstrate BSPS at JFT. Reduce size of BSPS by 35% while maintaining overall sensitivity on both mass spectrometer and genetic detection platforms against eight bacterial and viral materials. Transition to the Joint Biological Point Detection System (JBPDS) Block II.
- 1050 Chemical Point Detection - Evaluation of alternative technologies, e.g. surface enhanced RAMAN, molecular imprinted polymers, gas chromatograph-ion mobility spectrophotometer, etc. as risk reduction to support the Joint Chemical Biological Agent Water Monitor (JCBAWM).
- 794 Decontamination (DTO) - Produce sufficient V-agent (persistent nerve agent) enzymes and H-agent (blister) reactive polymers to optimize their use in foams, detergents solutions, and other types of dispersion systems. Incorporate conventional chemical approaches into end enzyme formulation.
- 7947 Decontamination - Complete demonstration of sensitive equipment decontamination methodology and finalize transition of technology for Block I of the JSSED program. Select technologies to be demonstrated for the decontamination of sensitive interiors (JSSED Block II) focusing on thermal approaches. Evaluate approaches for operational decontamination of sensitive equipment and interiors on the move (JSSED Block III). Investigate alternative approaches to improve efficiency of V-agent (persistent nerve agent) enzymes. Broaden the scope of enzymatic decontamination processes evaluating potential systems for non-traditional agents. Validate oxidative processes in aqueous and mixed/aqueous/organic solvent systems as solutions, emulsions or microemulsions. Examine dendritic assembly systems incorporating mono-ethanol amine functionality and perform preliminary agent challenges. Continue the evaluation of novel solid matrices. Initiate an effort to determine the fundamental limitations of solid based approaches. Continue efforts to determine the fate of agent on common environmental surfaces associated with fixed site facilities. Conduct study to evaluate the hazard posed by potential reaerosolization of BW materials. Determine an approach to use coating technology to address decontamination and protection of materiel items.

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(APPLIED RESEARCH)**

PROJECT

CB2**FY 2001 Planned Program (Cont):**

- 4976 Leap Ahead Technologies - Investigate advanced respiratory and percutaneous protection technologies identified in Individual Protection FEA to reduce thermal load and breathing resistance. Break technology barriers in developing simulants for emerging agents. Complete force differentiation assay (FDA). Refine discrimination algorithms and chamber test optical fluorescence/shape analysis and pyrolysis -gas chromatography-ion mobility spectrometry; two promising technologies capable of downsizing and providing classification among biological particles without fluids. Complete initial analysis of RADAR multi-mission sensor and identify other disparate sensors. Initiate exploration of chip-based phylogenetic assay for highly multiplexed biological agent detection. Initiate assessment of data gaps in threat agent data and needs for improved simulants in CB defense materiel development. Institute a simulant database for selecting appropriate simulants in materiel development and establish a repository for chemical simulants and a standard biological simulant laboratory.
- 2224 Individual Protection - Select and evaluate permselective membranes to validate the novel permselective membrane model. Investigate mechanisms for more durable nano-fibers; fabricate and test samples of those materials. Investigate nano-fiber bonding/integration methods, and conduct aerosol and challenge tests. Identify methodology for evaluation of suits against TICs. Construct a parametric skeleton model of candidate helmet/mask concepts to help identify those with most potential for long term solutions.

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(APPLIED RESEARCH)**

PROJECT

CB2**FY 2001 Planned Program (Cont):**

- 3712 Modeling and Simulation - Develop models for simulation of CB weapons effects on joint force operations for incorporation into advanced simulations such as Joint Conflict and Tactical Simulation (JCATS), Joint Simulation System (JSIMS), Joint Modeling and Simulation System (JMASS), and Joint Warfare System (JWARS). Improve coupling of CB environment and high resolution meteorological models for incorporation of CBW hazard prediction/tracking into forward-deployed meteorological forecast/nowcast operations. Continue development of advanced CBW environment models for more accurate, higher-resolution atmospheric transport and fate predictions in complex and urban terrain for battlespace awareness and contamination avoidance. Develop additional models for Joint Service CB defense equipment for application in SBA. Transition current version of the Simulation, Training, and Analysis for Fixed Sites (STAFFS) model to the Center for Army Analysis for evaluation. Enhance development of STAFFS model for simulation of CBW effects on operations at Aerial Ports of Debarkation (APOD) and Sea Ports of Debarkation (SPOD). Complete validation studies and software documentation for VLSTRACK version 3.
- 1206 Advanced Adsorbents for Protection Applications (DTO) - Prepare and evaluate materials and bed compositions according to property/performance correlations, and identify the optimal adsorbent bed composition for masks. Base selection of adsorbents on protection provided against both TICs and CB agents.
- 700 End of Service Life Indicator for Filters (DTO) - Construct and evaluate prototype mask end of service life indicators. Initiate development of advanced concepts in mask air filtration/purification.
- 1300 JCBAWM (DTO) - Complete design of integrated CB water monitor based on the most mature technology currently available, using an open architecture to ensure that new and improved technology can be used to update the overall system with minimal effort. Develop test protocols for testing system.

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PROJECT

CB2

FY 2001 Planned Program (Cont):

- 1821 Supporting Science and Technology - Complete initial toxicology study using highly toxic powder in the new nose-only exposure chamber for extremely hazardous aerosols. Measure quantitative performance of candidate aerosol collectors for advanced point biodetection technology. Demonstrate a new aerosol collector using mini-scale manufacturing technology, which substantially reduces power consumption compared to fielded collectors while maintaining high collection efficiency over the respirable particle size range from 1-10 micrometers diameter and operating at the Joint Service low temperature requirement (-28 degrees F). Continue to provide controlled biosimulant aerosol challenges for Joint Service, DARPA, and DOE experimental equipment in preparation for the JFT.
- 2185 Low Level Chemical Agent Operational Studies - Complete sarin exposure data analysis (lethality endpoint) on rats. Initiate miosis threshold studies using sarin over extended exposure durations. Initiate potency ratio studies of second-generation nerve agents for toxicological effects of extended exposure duration and low concentration exposures to validate and verify alarm and warning levels for detector systems.
- 4683 Man-portable Detectors - Continue insertion of semi-conductive metal oxide (SMO) technology (and SAWs if required) into a chemical detector brassboard. Based on user inputs, determine the operational parameters of a man-portable detection system. Joint Service requirements will be used to determine the response parameters and operating environment. The sensitivity of the device will be equal to or greater than that required for the Joint Chemical Agent Detector (JCAD) as specified in the JCAD operational requirements document (ORD). Demonstrate an integrated prototype detector system for CW agents under laboratory and field conditions.
- 1561 Improved CB Detection - Enhance performance of high sensitivity passive stand-off detector by increasing hardware sensitivity, characterizing and removing background variables, and improving system detection software.
- 741 SBIR

Total 43717

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**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2002 Planned Program:**

- 6400 Biological Point Detection - Reduce size and logistic burden of optical fluorescence/shape analysis system and Py-GC-IMS sensors. Test against expanded set of biological simulants and interferents. Initiate exploration of new concepts for small, combined chemical and biological identifiers. Develop and test concepts toward automation of chip-based phylogenetic analysis of biological materials. Develop database of multiple gene targets for biological agents. Identify and initiate exploration of other concepts for multiplexed identification/analysis of broad spectrum of biological agents. Continue generation and screening of recombinant antibodies against select biological agents, and transition best candidates to Critical Reagents Program. Initiate biological background data collection efforts to fill data gaps previously identified.
- 2400 Chemical Imaging Sensor (DTO) - Demonstrate a 16-pixel spectrometer operating at 360 Hz with off-line processing of data. Initiate planning for transition of brassboard design and build in support of Joint Service Wide Area Detection (JSWAD) program.
- 1325 Advanced Adsorbents for Protection Applications (DTO) - Continue evaluation of engineered beds and materials and select the optimal bed/material combination for single IP and CP filter pass applications. Select adsorbents for both CP and IP applications against TIC and CB agents.
- 3150 Collective Protection - Determine TIC breakthrough and equilibrium data for advanced and novel adsorbents. Conduct prototype (large diameter bed) regenerative filter bed testing to demonstrate bed improvements and to update the performance model. Develop novel single pass filter concepts using nano-materials and identify adsorbents to support that concept. Evaluate shelter materiel using technologies identified to facilitate rapid development of an improved product.
- 2400 Modeling and Simulation of Joint Operability - Expand model development for simulation of CBW effects on joint force operations for incorporation into advanced simulations. Demonstrate operational capability of the STAFFS model for simulation of CBW effects on operations at APODs and SPODs.

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**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2002 Planned Program (Cont):**

- 2300 Modeling and Simulation of CBW Environment - Expand development of advanced CB weapons models (Lagrangian particle and complex fluid dynamics methodologies) for more accurate, higher-resolution atmospheric transport and fate predictions in complex and urban terrain for battlespace awareness and contamination avoidance. Extend development of high-altitude CB agent behavior for application in Tactical Ballistic Missile (TBM) intercept analysis. Begin development of the capability to accurately model the interaction (evaporation and persistence) of chemical agents with materials and the reaerosolization of biological agents.
- 9800 Supporting Science and Technology - Continue assessment of gaps in threat agent data, and identify needs for improved simulants in CB defense materiel development. Initiate a program of synthesis, toxicology screening, and characterization of new threat materials (to include Fourth Generation Agents (FGAs)) identified as urgent needs while continuing assessment of long-term needs. Initiate development of improved simulants for chemical aerosols, microencapsulated viruses, stabilized bacteria, and proteinaceous and nonproteinaceous toxins/bioregulators. Continue to measure quantitative performance of candidate aerosol collectors for advanced point biological detection technology. Initiate the design of a new generation of aerosol concentrators and collectors using micro-machining technology to reduce size, power consumption, and weight, in order to meet stringent requirements for advanced miniature detection systems. Initiate design of advanced aerosol inlets to meet Joint Service requirements for high collection efficiency over the respirable particle size range at wind speeds up to 60 mph. Continue to provide controlled biological simulant aerosol challenges for Joint Service, DARPA, and DOE experimental equipment in preparation for the JFT. Assemble a database on agent fate on surfaces incorporating prior year's findings. Complete BW reaerosolization studies.
- 2650 Detection of Contaminants on Surfaces - Initiate a program to develop technology to detect the presence of CBW contaminants on surfaces, for use in vehicular and handheld systems. Initial studies will focus on active and passive optical technologies that could be employed on or from a vehicular platform.

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(APPLIED RESEARCH)**

PROJECT

CB2**FY 2002 Planned Program (Cont):**

- 1750 Biological Standoff Detection (DTO) - Complete establishment of system requirements and conduct down selection based on weighted criteria. Establish technical potential of top ranked technologies. Perform testing, analyze data, and identify strengths and weaknesses on the top five rated technologies for the next generation stand off system.
- 1600 Chemical Point Detection - Test/demonstrate the capabilities of the high potential alternative technologies from the technical evaluation of technology conducted in FY01 for the JCBAWM effort.
- 2100 Modeling and Simulation of CB Defense Equipment - Expand development of models for Joint Service CB defense equipment for application in Simulation Based Acquisition (SBA) training, distributed simulations, war-gaming, and military-worth evaluations.
- 800 End of Service Life Indicator for Filters (DTO) - Construct and evaluate proof of principle for end of service life indicator (ESLI) model.
- 2000 JCBAWM (DTO) - Complete construction of initial breadboard. Complete testing to identify shortfalls. Transition technologies to Advanced Technology Development.
- 2100 Early Warning Detection - Demonstrate concept and technology of a test representative RADAR system for queuing of stand off systems. Investigate options for linking disparate sensors to battlespace management systems.

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(APPLIED RESEARCH)**

PROJECT

CB2**FY 2002 Planned Program (Cont):**

- 4550 Individual Protection - Incorporate aerosol threat mediation techniques in the fabrication of concept garments. Initiate testing of concept garments. Identify and incorporate color transition materials into nano-fiber membranes and test for response to agent simulants. Evaluate fielded and developmental clothing materials for the protection they provide against TICs. Produce trial membranes using ion implantation techniques, and evaluate their material physical properties and agent protection capabilities. Conduct a study of adsorbent fabric placement in semi-permeable membrane garments for added vapor and aerosol protection. Fabricate and evaluate a proof of concept model of the helmet/mask concept using the parametric skeleton model. Construct and evaluate prototype mask end of service life indicators. Initiate development of advanced concepts in mask air filtration/purification.
- 900 Decontamination (DTO) - Complete development of enzymatic formulations and transition to either the Joint Service Fixed Site Decontamination System program as a product improvement or to follow-on efforts under the Superior Decontamination System program.
- 7431 Decontamination - Continue developmental efforts to address JSSED Block II and III approaches focusing on thermal technology and spot cleaning methodology. Develop solution approaches for Superior Decontamination Systems combining novel chemical and biochemical technologies into a unified approach. Complete the evaluation determining the physical limitations of novel solid technology and implement findings into the program. Determine best future uses for these materials.
- 5000 Low Level Chemical Agent Operational Studies - Complete miosis threshold studies for sarin over extended exposure durations. Continue G agent potency ratio studies on rats. Initiate multi-species animal studies for G agents. Initiate planning for third generation nerve agents studies in rats. Initiate physiological modeling efforts to understand the dependence of toxicological effects on the route of exposure to low level nerve agents.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

CB2**FY 2002 Planned Program (Cont):**

- 2500 FGA (non-medical) - Modify point detection systems to enhance performance against new chemical targets and characterize effect of modifications on performance to existing chemical targets and on interference rejection. Broaden spectral knowledge base in order to predict performance of active and passive IR sensors for detection of surface contamination. Examine novel materials and material treatment solutions to decrease penetration of aerosol particulates through overgarments.
- 4000 Biological Standoff - Investigate novel approaches to detection and discrimination of biological aerosols in standoff mode. Examine application of improved laser sources and methodologies and develop spectral database and methodologies to support assessment of new approaches such as Brillouin scattering, Mueller matrix LIDAR, millimeter wave spectroscopy. Investigate potential applicability of UV and IR imaging.
- 3000 Agent Fate - Identify standard construction and natural environmental materials and study interactions of these materials with chemical agents using novel in situ methods. Develop refined laboratory methodologies to support these studies. Define previously unaccounted environmental loss mechanisms and provide results for improvement of hazard modeling. Refine relevant physical property data relate to chemical hazard evolution.
- 2000 CB Modeling/Simulation - Enhance spatial resolution of hazard prediction codes through physical models that incorporate resolution improvements in radiation, turbulence, and precipitation physics. Initiate coupling of numerical weather prediction models with existing CBW dispersion codes.

Total 70156

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**PE NUMBER AND TITLE
**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**PROJECT
TB2

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
TB2	MEDICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	23370	23107	36729						

A. Mission Description and Budget Item Justification:

Project TB2 MEDICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH): This project funds applied research on the development of vaccines, therapeutic drugs, and diagnostic capabilities to provide an effective medical defense against validated biological threat agents including bacteria, toxins, and viruses. Innovative biotechnological approaches and advances will be incorporated to obtain medical systems designed to rapidly identify, diagnose, prevent, and treat disease due to exposure to biological threat agents. Categories for this project include Defense Technology Objectives (DTO); current Science and Technology Plans in medical biological defense (diagnostic technology, bacterial therapeutics, toxin therapeutics, viral therapeutics, bacterial vaccines, toxin vaccines, and viral vaccines); and directed research efforts (chemical/biological hazard detection and protocols to enhance biological defense).

FY 2000 Accomplishments:

- 600 Common Diagnostic Systems (DTO) - Evaluated alternative approaches, devices, and reagents for the portable nucleic acid analysis of a broad range of biological threat agents in clinical specimens that will lead to an enhanced diagnostic capability by field medical laboratories. Established methods and prepared documentation for preparing standards and controls for regulatory-compliant evaluation trials. Evaluated alternative methods for rapid medical specimen-processing compatible with the integrated specimen processing and gene amplification system that will be evaluated for further refinement and transition.
- 500 Medical Countermeasures for Encephalitis Viruses (DTO) - Defined a common vaccine platform for development of a multivalent equine encephalitis vaccine using a full-length cDNA recombinant vaccine for Venezuelan equine encephalitis (VEE) virus types 1A/B/C.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2000 Accomplishments (Cont):**

- 1000 Multiagent Vaccines for Biological Threat Agents (DTO) - Evaluated prior studies performed with individual and combined vaccine components (antigens, DNA, viral vectors, etc.) and identified several components to test in multiagent vaccine delivery platforms.
- 2343 Diagnostic Technologies - Prepared new diagnostic reagents by using recombinant biotechnologies and designed devices that will enhance the diversity and depth of the medical diagnostic capability. Optimized processing methods for selected clinical specimen formats, including swabs, whole blood, sera, and tissues that will enhance current capabilities for the rapid recognition of infections by biological threat agents. Prepared evaluation criteria and standardized reagents that are compatible with regulatory guidelines prior to comprehensive evaluation trials of portable nucleic acid analysis systems for the identification of biological threat agents in clinical laboratories. Optimized new medical diagnostic approaches, reagents, and devices for the rapid recognition of infections by *Bacillus anthracis* (*B. anthracis*), *Yersinia pestis* (*Y. pestis*), *Francisella tularensis* (*F. tularensis*), *Brucella* sp., alphaviruses, filoviruses, and orthopox viruses that will enhance medical care and force protection. Evaluated preclinical models for assessing diagnostic approaches that will enhance identification of anthrax and alphavirus infections prior to transition to regulatory-compliant medical laboratories.
- 589 Therapeutics, Bacterial - Evaluated selected antimicrobial compounds for treatment of respiratory infection caused by *B. mallei*, the causative agent of glanders. Initiated a study of cellular mediators (cytokines, chemokines, and cell surface receptors) during glanders infection and immunomodulation as a potential countermeasure approach.
- 1771 Therapeutics, Toxin - Developed approaches to the generation of therapeutics (peptides and synthetic compounds) for Staphylococcal enterotoxins (SEs), botulinum neurotoxin, and ricin toxin based on rational drug design and molecular structure of the toxins. Synthesized a short polypeptide that is the most potent inhibitor known (2 uM) for type A botulinum neurotoxin. Developed high-throughput assays, suitable for screening large numbers of compounds for inhibitors of botulinum toxin proteolytic activity. Completed therapeutic proof-of-concept experiments in nonhuman primate and mouse SE incapacitation models.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2000 Accomplishments (Cont):**

- 2326 Therapeutics, Viral - Developed at the Centers for Disease Control & Prevention, an aerosol variola nonhuman primate model for future bridging studies to monkeypox as a surrogate model in support of the U.S. Government Research Plan for smallpox. Demonstrated protection from lethal challenge in the Ebola virus mouse model using antibody therapy.
- 3603 Vaccines, Bacterial - Further characterized selected plague virulence factors as vaccine antigen candidates; identified two surrogate markers of protection against plague in an animal model; established the correlation of surrogate markers of immunity with efficacy of the candidate plague vaccine in the mouse model; established an improved animal (rabbit) model for anthrax. Explored in vitro correlates of immunity using novel gene microarray technology and found increases in messenger RNA expression for over 30 genes in murine spleen cells cultured with Brucella antigens.
- 2015 Vaccines, Toxin - Completed vaccine candidate cloning of botulinum toxin serotypes D and G in anticipation of future requirements for vaccine candidates. Initiated studies focused on increasing the immunogenicity for botulinum toxin serotype vaccines for E and F. Characterized candidate vaccines for SEs C1 and D. Demonstrated that the T-lymphocyte assay is useful in predicting the probability of survival in rhesus monkeys vaccinated with recombinant SEB vaccine and challenged by the aerosol route. Developed new surrogate immune assay based on dendritic cell cultures for evaluating human immune responses.
- 1979 Vaccines, Viral - Established and refined a nonhuman primate model for filoviruses. Determined aerosol LD50 and characterized pathology of the disease.
- 1821 Chemical/Biological Hazard Detection - Requested full proposal to develop custom cellular DNA and protein arrays designed to detect cellular responses to infectious agents to support the development of rapid quantitative devices to measure exposure and response to validated and emerging biological threat agents, thus enabling appropriate triaging and medical intervention.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2000 Accomplishments (Cont):**

- 4823 Protocols to Enhance Biological Defense - Initiated review of proposal to examine innovative methodologies for treatment of anthrax infection to include endolymphatic administration of antibiotics, use of microencapsulated antibiotics, development of therapeutics to protect the phagocytic system from destruction by anthrax lethal toxin, and the use of proinflammatory cytokine inhibitors.

Total 23370**FY 2001 Planned Program:**

- 600 Common Diagnostic Systems (DTO) - Establish preclinical models for the evaluation of rapid nucleic acid analysis options that will enhance the recognition of infections caused by a broad range of biological threat agents. Prepare and optimize new molecular diagnostic reagents, controls, and protocols that are compatible with emerging portable nucleic acid analysis systems for the identification of biological threat agents before the conduct of comprehensive evaluation trials.
- 400 Medical Countermeasures for Brucella (DTO) - Continue to develop and validate in vitro systems in mice and nonhuman primates to reliably quantitate the intensity of potentially protective immune responses and determine the immune system components that eliminate infection with candidate live vaccines. Determine stability of live, attenuated vaccine strain over time, using the mouse model. Develop additional live vaccine candidates with multiple attenuating mutations.
- 700 Medical Countermeasures for Encephalitis Viruses (DTO) - Develop nonhuman primate models for VEE virus type 1E and for western equine encephalitis virus. Complete the development of vaccine candidates for eastern equine encephalitis virus.
- 500 Multiagent Vaccines for Biological Threat Agents (DTO) - Improve vaccine delivery platforms (naked DNA and VEE replicon systems) to optimize their efficiency for use as multiagent vaccines.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2001 Planned Program (Cont):**

- 573 Needleless Delivery Methods for Recombinant Protein Vaccines (DTO) - Identify assays for toxin-specific antibodies/other indicators of immunity. Identify commercial or proprietary devices for vaccine delivery.
- 160 Recombinant Plague Vaccine Candidate (DTO) - Complete the development of assays and reagents for determining correlates for immunity for the recombinant plague vaccine candidate.
- 500 Recombinant Protective Antigen (rPA) Anthrax Vaccine Candidate (DTO) - Perform comparative biochemical and biophysical characterization of recombinant protective antigen (rPA) vaccine candidate and licensed anthrax vaccine (AVA).
- 2737 Diagnostic Technologies - Prepare new diagnostic reagents and devices compatible with emerging immunological platforms and rapid nucleic acid analysis systems for enhanced recognition of infections with validated biological threats. Evaluate medical diagnostic technologies and specimen-processing methods compatible with a comprehensive integrated medical diagnostic system for the rapid recognition of infections by validated biological threats (bacteria, viruses, and toxins) of military interest. Identify field sites for the comprehensive validation of rapid diagnostic methods that will provide performance data prior to transitioning to advanced development.
- 565 Therapeutics, Bacterial - Optimize animal models for therapeutic indices; evaluate in vivo activity of selected antimicrobials in established in vitro biochemical assays. Evaluate next generation antibiotics for therapeutic efficacy against bacterial threat agents.
- 5143 Therapeutics, Toxin - Standardize assays for high-throughput screening of small molecule inhibitors of botulinum and SE toxin ligand-receptor interaction.

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**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2001 Planned Program (Cont):**

- 3786 Therapeutics, Viral - Develop a rabbitpox-rabbit animal model for analysis and characterization of candidate antiviral compounds for therapeutic activity. Investigate mechanisms of Ebola and Marburg virus (MBGV) pathogenesis in nonhuman primate models to define likely targets in agent pathogenesis and identify potential mediators of shock.
- 5123 Vaccines, Bacterial - Evaluate previously identified virulence factors as vaccine candidates for Y. pestis. Optimize the animal model for aerosol exposure to B. mallei (glanders) for use in assessing vaccine candidates. Complete research on existing surrogate markers of protection against plague; identify surrogate markers for anthrax and additional markers for plague.
- 1184 Vaccines, Toxin - Express recombinant vaccine candidates for botulinum toxin serotypes D and G in the Pichia yeast system and initiate efficacy studies.
- 745 Vaccines, Viral - Explore the addition of cytokine gene co-delivery with Ebola viral genes to achieve protective immunity. Determine the components required in a vaccine that will protect against the most divergent isolates of MBGV.
- 391 SBIR

Total 23107**FY 2002 Planned Program:**

- 600 Common Diagnostic Systems (DTO) - Complete validation of approaches, reagents, and protocols for portable devices capable of detecting and identifying nucleic acids from a broad range of biological threat agents in clinical specimens.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2002 Planned Program (Cont):**

- 350 Medical Countermeasures for Brucella (DTO) - Test most efficacious vaccine candidate against Brucella abortus (B. abortus) and B. suis in the mouse lung infection model. Test efficacy against B. melitensis of additional live vaccine candidates in the mouse lung infection model. Continue to develop and validate in vitro systems in mice and nonhuman primates to reliably quantitate the intensity of potentially protective immune responses and determine the immune system components that eliminate infection with candidate vaccines.
- 200 Medical Countermeasures for Encephalitis Viruses (DTO) - Develop nonhuman primate models for VEE virus type 3 and for eastern equine encephalitis virus. Complete the development of vaccine candidates for VEE virus type 3.
- 300 Multiagent Vaccines for Biological Threat Agents (DTO) - Complete final improvements to the vaccine delivery platforms for their use as multiagent vaccines.
- 593 Needleless Delivery Methods for Recombinant Protein Vaccines (DTO) - Evaluate formulations for intranasal, inhalation and transdermal application of recombinant proteins intended for use as vaccines. Determine the optimal mode of vaccine delivery using animals.
- 230 Recombinant Plague Vaccine Candidate (DTO) - Determine the range of protection of the recombinant plague vaccine candidate against other virulent strains of Y. pestis in animals.
- 500 Recombinant Protective Antigen (rPA) Anthrax Vaccine Candidate (DTO) - Perform passive transfer studies with AVA-immune human sera in mice and rabbits. Initiate a challenge study employing human sera passively transferred to monkeys.
- 5241 Diagnostic Technologies - Prepare diagnostic reagents that will enhance the depth and diversity of current approaches for the rapid recognition of infection by potential biological threat agents. Evaluate preclinical models and standards for evaluating medical diagnostic systems prior to transition to the regulatory -compliant medical laboratory.

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**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2002 Planned Program (Cont):**

- 1853 Therapeutics, Bacterial - Optimize and correlate in vitro assays with animal models for selected antibiotic and nonantibiotic therapeutics for bacterial threat agents; examine effects of selected therapies on multiple agent exposures in an animal model.
- 7995 Therapeutics, Toxin - Initiate structural stabilization and formulation studies on lead inhibitors of botulinum and SE toxin activity. Refine in vivo and standardize in vitro screening models for botulinum toxin and SE intoxication.
- 3706 Therapeutics, Viral - Assess the potential for immunotherapy against Ebola virus in nonhuman primate models. Complete investigation of mechanisms of Ebola and MBGV pathogenesis in nonhuman primate models to characterize promising surrogate markers of efficacy for therapies.
- 4530 Vaccines, Bacterial - Optimize in vitro correlate assays for candidate vaccines against various bacterial threat agents; evaluate the efficacy of additional novel component vaccine candidates (i.e., fusion proteins and antigen cocktails). Optimize formulation and dosage regime of selected vaccine candidates in animals.
- 2023 Vaccines, Toxin - Determine whether the recombinant fragment C vaccine candidates can elicit protective immunity in mice against neurotoxins produced by various strains of Clostridium botulinum.
- 2608 Vaccines, Viral - Define the correlates of immunity (i.e., neutralizing antibody, cytotoxic T cells) that protect against disease from MBGV. Develop assays to measure "surrogate markers" to validate the efficacy of vaccine candidates in established model systems for MBGV.
- 1500 Vaccines - Enhance applied research toward innovative approaches for the development and delivery of next generation and generation-after-next vaccines and strategies to enhance the immune response to broad classes of biological threats.
- 1500 Medical Countermeasures - Enhance applied research efforts toward the development of broad-spectrum therapeutic countermeasures for exposure to broad classes of biological threats.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TB2**FY 2002 Planned Program (Cont):**

- 3000 Genetically Engineered Threat Medical Countermeasures - Expand genetic and protein databases to identify and catalogue the various virulence factors, toxic motifs and host regulatory proteins responsible for the pathologic effects of biological threat agents. Continue research efforts such as curating the genetic information base, evaluating mechanisms of pathophysiology associated with toxin threats and developing critical proteomics capability.

Total 36729

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DATE
June 2001BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA2 - Applied ResearchPE NUMBER AND TITLE
0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)PROJECT
TC2

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
TC2 MEDICAL CHEMICAL DEFENSE (APPLIED RESEARCH)	13070	14237	18596							

A. Mission Description and Budget Item Justification:

Project TC2 MEDICAL CHEMICAL DEFENSE (APPLIED RESEARCH): This project funds medical chemical defense applied research and emphasizes the prevention of chemical casualties through application of pharmaceuticals for prevention and treatment of the toxic effects of nerve, blister, respiratory, and blood agents. This project supports applied research of prophylaxes, pretreatments, antidotes, skin decontaminants, and therapeutic compounds that will counteract the lethal, physical, and behavioral toxicities of chemical agents. It also supports development of medical chemical defense materiel that ensures adequate patient care, field resuscitation, and patient management procedures. Categories for this project include Defense Technology Objectives (DTOs), Science and Technology Plans (Pretreatments, Therapeutics, and Diagnostics), and directed research efforts (Low Level Chemical Warfare Agent Exposure and Fourth Generation Agents).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TC2**FY 2000 Accomplishments:**

- 1300 Chemical Agent Prophylaxis II (DTO) - Identified best candidates of genetically engineered scavengers as next generation pretreatments for nerve agents.
- 3898 Medical Countermeasures for Vesicant Agents (DTO) - Assessed the efficacy of new, improved countermeasure technologies to vesicant exposure in several model systems, both in vitro and in vivo. Prepared supporting documentation for Milestone A technical data package for lead countermeasures for vesicant agents.
- 680 Diagnostics - Identified promising analytical procedures for diagnosis of vesicant-induced inflammation. Assessed the efficacy of far-forward, rapid diagnostic tests for blister and nerve agents for real-time analysis of clinical samples on the battlefield.
- 3693 Pretreatments - Developed in vivo transgenic animal models for use as test beds for evaluating scavengers. Expanded the evaluation of human protein catalytic scavengers to include enzymes and human butyrylcholinesterase. Initiated development of an animal model capable of producing large quantities of recombinant enzyme scavenger. Identified several delivery platforms for exploration of administration of bioscavenger genetic material for transient induction of nerve agent scavengers.
- 1934 Therapeutics - Evaluated potential phosgene injury treatments using mouse lung model. Discovered a highly effective wetting solution for a reusable polyurethane sponge that significantly increased survival rates for guinea pigs whose skin was wiped after epidermal organophosphate exposure. Determined that cholinesterase enzymes could be impregnated on the polyurethane sponge and maintain activity for one year at 37 degrees C. Discovered that triamcinolone/cefazolin combination provides considerable protection against sulfur mustard (HD)-induced ocular damage. Identified a therapeutic mixture (Varma mixture) as a promising treatment for HD-induced ocular injury.

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE
**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT
TC2

FY 2000 Accomplishments (Cont):

- 1565 Low Level Chemical Warfare Agent Exposure - Identified pharmacological, physiological, and toxicological methods for monitoring long term, low level effects of chemical warfare agents. Developed animal models and exposure limits for chronic exposures to chemical warfare nerve agents. Investigated physiological markers for long term neuroanatomical effects of exposures to chemical warfare nerve agents.

Total 13070

FY 2001 Planned Program:

- 1200 Chemical Agent Prophylaxis II (DTO) - Test best candidates of genetically engineered scavengers using appropriate model systems. Expand physiologically based pharmacokinetic (PK) models for use in PK studies of candidate scavengers with/without agent present in a variety of species to include efficacy estimates in humans. Explore approaches for evaluating the human safety of human protein scavengers. Determine, through discussions with the FDA, the type(s) of data required for submission with an investigational new drug application for a human recombinant catalytic protein.
- 4000 Medical Countermeasures for Vesicant Agents II (DTO) - Define in vitro/in vivo models for safety and efficacy studies that can be extrapolated to humans. Determine best route of administration for candidate therapies. Begin physicochemical data acquisition for therapy candidates. Determine in vivo efficacy of candidate therapies for prevention of mustard-induced pathology. Begin downselect process.
- 591 Diagnostic - Evaluate commercial off-the-shelf products for potential for use as pretreatments or therapeutics for nerve agent, vesicant agent, blood agent, or respiratory agent exposure.
- 2728 Pretreatments - Extend molecular modeling and site-directed mutagenesis research to develop next generation nerve agent bioscavenger.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TC2**FY 2001 Planned Program (Cont):**

- 3477 Therapeutics - Optimize formulations for sponges, towelettes, and surgical pads containing scavenger enzymes for use in wound decontamination. Begin efforts to acquire human butyrylcholinesterase enzyme in bulk. Screen anticholinergic compound candidates for improvement of effectiveness of anticonvulsant, midazolam.
- 1000 Low Level Chemical Warfare Agent Exposure - Determine pharmacological, physiological, and toxicological effects of long term, low level chemical warfare agents. Investigate new sensitive biochemical and histological assay technologies for use in low level chemical warfare agent exposures. Investigate the use of biological markers to indicate prior low dose chemical warfare agent exposure.
- 1000 Fourth Generation Agents - Assess the efficacy against Fourth Generation Agents of countermeasures currently fielded or in advanced or exploratory development against nerve agents.
- 241 SBIR

Total 14237

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA2 - Applied Research

PE NUMBER AND TITLE

0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)

PROJECT

TC2

FY 2002 Planned Program:

- 1000 Chemical Agent Prophylaxis II (DTO) - Complete testing of various vector/gene combinations to validate in an animal model the concept of gene therapy for delivery of bioscavengers.
- 3000 Medical Countermeasures for Vesicant Agents II (DTO) - Evaluate improved animal models for screening candidate combination therapies for HD exposure. Define side effects and establish adversity levels; collate available industrial documentation.
- 1448 Diagnostics - Modify currently fielded cholinesterase testing kit to more efficiently test a large sample load.
- 4971 Pretreatments - Develop animal models to test scavenger candidates efficacy. Conduct characterization studies. Begin preliminary efficacy studies with next generation nerve agent scavengers. Continue development of potential transgenic/bioengineered sources of next generation nerve agent.
- 2677 Therapeutics - Assess candidate agents in suitable animal models of soman-induced status epilepticus for efficacy in saving vulnerable neurons and improving neurobehavioral outcome. Develop criteria for evaluating neuronal salvage after status epilepticus. Determine the essential ingredients for a rinse solution to optimally treat HD-induced ocular injury. Evaluate improved animal models for screening candidate combination therapies.
- 1000 Low Level Chemical Warfare Agent Exposure - Study biological markers for indicating prior low dose exposures and investigate selectivity of the markers for chemical warfare agents.
- 4500 Fourth Generation Agents - Assess the efficacy of new proposed nerve agent countermeasures. Prioritize potential approaches for improving effectiveness of new nerve agent countermeasures. Evaluate oxime effectiveness against Fourth Generation Agents. Evaluate newly identified anticonvulsants for improved survival after exposure to FGAs. Assess the effects of in vivo persistence of FGAs on current countermeasure efficacy. Confirm cardiac pathology seen after exposure to FGAs.

Total 18596

Project TC2

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**RDT&E DEFENSE-WIDE/
BA2 - Applied Research**

PE NUMBER AND TITLE

**0602384BP CHEMICAL/BIOLOGICAL DEFENSE
(APPLIED RESEARCH)**

PROJECT

TC2

Project TC2

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ADVANCED
DEVELOPMENT)**

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Program Element (PE) Cost	44705	59905	69249							
CB3 CHEMICAL BIOLOGICAL DEFENSE (ADV TECH DEV)	7590	16410	18688							
CP3 COUNTERPROLIFERATION SUPPORT (ADV TECH DEV)	10240	10245	12575							
TB3 MEDICAL BIOLOGICAL DEFENSE (ADV TECH DEV)	17710	22980	26611							
TC3 MEDICAL CHEMICAL DEFENSE (ADV TECH DEV)	9165	10270	11375							

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ADVANCED
DEVELOPMENT)**

A. Mission Description and Budget Item Justification: This program element demonstrates technologies that enhance the ability of U.S. forces to defend against, and survive chemical and biological (CB) warfare. This PE funds advanced technology development for Joint Service and Service-specific requirements in both medical and non-medical CB defense areas. The medical program aims to produce drugs, vaccines, and medical devices as countermeasures for CB threat agents. Specific areas of medical investigation include: prophylaxis, pretreatment, antidotes and therapeutics, personnel and patient decontamination, and medical management of casualties. In the non-medical area, the focus is on demonstrations of CB defense technologies, including biological detection, chemical detection, and decontamination. These demonstrations, conducted in an operational environment with active user and developer participation, integrate diverse technologies to improve DoD Chemical/Biological Warfare (CBW) defense and deterrence. These demonstrations are leveraged by the Counterproliferation Support Program and include remote Biological Detection. Work conducted under this PE transitions to and provides risk reduction for Demonstration/Validation (PE 0603884BP) and Engineering/Manufacturing Development (PE 0604384BP) activities. The work in this PE is consistent with the Joint Service NBC Defense Research, Development, and Acquisition (RDA) Plan. This PE also provides for the conduct of advanced technology development in the areas of real-time sensing, accelerated BW operational awareness, and the restoration of operations following a BW/CW attack. This program is dedicated to conducting proof-of-principle field demonstrations, and tests of system-specific technologies to meet specific military needs.

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DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ADVANCED
DEVELOPMENT)**

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	56991	46594	53283	
Appropriated Value	57110	57894	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	-407	0	
b. SBIR/STTR	-825	0	0	
c. Omnibus or Other Above Threshold Reductions	-14815	0	0	
d. Below Threshold Reprogramming	3392	2550	0	
e. Rescissions	-157	-132	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	15966	
FY2002/2003 President's Budget	44705	59905	69249	

Change Summary Explanation:**Funding:**

FY02 - Increases to the technology base to accelerate the investigation and development of CBD technologies, support response to emerging threat requirements, and protect critical technology base infrastructure. (CB3 \$11,167K; CP3 \$1.278K; TB3 \$3,843K; TC3 \$406K). General reduction to fund higher priority efforts (-\$1,066K) and increase for inflation assumptions (\$338K).

Schedule:**Technical:**

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**PE NUMBER AND TITLE
0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)
PROJECT
CB3

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
CB3	CHEMICAL BIOLOGICAL DEFENSE (ADV TECH DEV)	7590	16410	18688						

A. Mission Description and Budget Item Justification:

Project CB3 CHEMICAL BIOLOGICAL DEFENSE (ADV TECH DEV): This project demonstrates technology advancements for Joint Service application in the areas of chemical and biological agent detection and identification, decontamination, and individual/collective protection which will speed maturing of advanced technologies to reduce risk in system-oriented Demonstration and Validation efforts. This project funds the Joint Service Fixed Site Decontamination (JSFXD) Program, the Joint Service Warning and Identification LIDAR (Light Detection And Ranging) Detector (JSWILD) Program, (JSWILD is transitioning to ARTEMIS in CP4, in FY01 and CA4, in FY02 and beyond.) the Joint Service Sensitive Equipment Decontamination (JSSED) Program, the Joint Chemical/Biological Agent Water Monitor (JCBAWM), the Joint Biological Standoff Detection System (JBSDS), and the Joint Service Wide Area Detector (JSWAD). Additionally, this program funds the Small Unit Biological Detector (SUBD), Consequence Management Interoperability Service (CMIS), and the force medical protection ACTD (formerly known as the Chemical Biological Individual Sampler (CBIS).

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DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

CB3**FY 2000 Accomplishments:**

- 5001 JSWILD - Continued fabrication of brass-board system to include high energy laser, custom electronics and software, and advanced algorithms for complete hemispherical detection of chemical materials such as rains, aerosols, and vapors at tens of kilometers range. Initiated AoA for technology and completed planning for demonstration.
- 1260 JSSED - Conducted a formal AoA validating the three-block approach to solve JSSED requirements. Completed required acquisition documentation and prepared statements of work for acquisition contracts. Initiated an effort to transfer Block I technology approach into a suitable candidate for Block III operational decontamination. Examined the potential use of combined thermal/steam approaches to address JSSED Block II decontamination.
- 329 Monopack and Residual Life Initiatives - Transitioned a candidate material (monopack) to the Joint Protective Aircrew Ensemble program. Completed the technology survey and identified the four best technical approaches to develop residual life indicators for protective clothing.
- 1000 JSFXD - Completed MS I documentation for Blocks I, II, and III of the program representing respectively, a family of decontaminants, family of applicators, and decontamination of skin and casualties. Conducted FEA for skin contaminants. Completed draft reports on the phase one evaluation of eight candidate decontamination systems to include: chemical efficacy (reaction kinetics and product studies, residual post decontamination contact hazard and off-gassing hazard); assessment of bio-simulant efficacy; compatibility test with a variety of materials; detector interference evaluation; and a literature review and assessment of the toxicology and environmental soundness of the components contained in the decontaminants.

Total 7590

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

CB3**FY 2001 Planned Program:**

- 2142 JSWILD - Complete build of, and demonstrate, brassboard system, and transition technology to ARTEMIS (Active Standoff CW Detection System).
- 2386 JSSED - Conduct development of sensitive equipment/items decontamination technologies (Block I) with emphasis on the advanced development of technologies for interior decontamination (Block II/III).
- 2388 Detection Technologies - Evaluate and support accelerated efforts on technologies with significant potential for demonstration in various Advanced Concept Technology Demonstrations (ACTD) and upcoming mature programs. Effort involves hyperspectral imaging and a test representative radar system to provide cueing and early warning capabilities.
- 2702 Chemical/Biological Advanced Materials Research - Demonstrate the value of advanced material used in protection concepts for filtration, clothing, and tentage.
- 742 SUBD - Advance the current component technologies to a final configuration and pay for contract closeout and archiving of data.
- 3842 CMIS - Start development of a "common operating view" that enables DOD secondary responders to view tactical information in advance of arriving at the scene of a Weapons of Mass Destruction (WMD) incident. Tailor Commercial Off-The-Shelf (COTS) software that is adapted to the "lowest common denominator." Evaluate Geospatial Information System (GIS) data and applications for WMD incidents.
- 1930 Chemical Biological Individual Sampler (CBIS) - Conduct testing and validation of COTS passive chemical samplers as well as develop the standard analytical method for these samplers. Conduct demonstrations that address critical operations issues.
- 278 SBIR

Total 16410

Project CB3

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Exhibit R-2 (PE 0603384BP)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

CB3**FY 2002 Planned Program:**

- 2010 JSSED - Evaluate Block II/III technologies. Perform agent chamber/panel tests to validate performance of candidate technologies on a variety of surfaces. Address material compatibility issues. Initiate documentation of technology findings to support transition to development.
- 503 JSFXD Block III - Conduct down selection screen of candidate skin decontamination identified in the FEA. Compare to baseline M-291 kit. Candidate technologies include the nanoemulsion system developed by the DARPA program and a foam system developed under the Department of Energy Chemical Biological National Security Program. Transition optimal candidate(s) to JSFXD Demonstration/Validation phase for insertion into the FDA approval process.
- 750 Foam Based Decontamination Systems - Conduct evaluation of and modify the DOE foam based decontamination system to meet military challenge levels. Extend the test bed to include Fourth Generation Agents.
- 500 Detection Technologies - Complete assessment of hyperspectral imaging technologies and establish transition points for the highest potential payoff capabilities.
- 2375 JCBAWM - Initiate planning for technology transition to Program Definition and Risk Reduction (PDRR). Initiate design and build of brassboard system for demonstration.
- 2000 Portable Chemical/Biological Detection Technologies - Initiate evaluation of technologies from all sources for feasibility in application to military requirements for potentially man-portable multi-agent chemical and biological detectors with reduced logistics burden. The effort will focus on performance characterization and chamber test with identification of technological shortfalls. Specific initial candidates include DOE micro-CB lab, pyrolysis-GC/IMS, optical particle classifier.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

CB3**FY 2002 Planned Program (Cont):**

- 3550 Biological Detection Technologies - Develop assays and initiate live agent testing of DARPA Micro Array of Gel-Immobilized Compounds (MAGIChip) nucleic acid identification technology for Bacillus species. Initiate automation of DARPA-developed ultraviolet-infrared matrix-assisted laser desorption (MALDI) mass spectrometry (MS). Initiate comparative evaluation for sensitivity and discrimination capability of UV-MALDI and UV-IR MALDI MS candidates from DARPA and electrospray ionization (ESI) MS using aerosol collections in chamber tests. Identify sample processing challenges for improvement.
- 2000 Joint Field Trials - Expand the biological Joint Field Trial concept to a multi-tiered set of evaluation protocols to facilitate the characterization of candidate technology at varying levels of maturity.
- 2000 CB Modeling/Simulation - Accelerate development and demonstration of models describing impacts of CBW on site operations.
- 3000 Technology Transition - Conduct acceptance testing of anthrax antibody mixtures under development for improved affinity. Complete testing of upconverting phosphors. Implement improved sample treatment procedures for MALDI-TOF mass spectrometer and prepare for field evaluation.

Total 18688

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June 2001

BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA3 - Advanced Technology Development**

PE NUMBER AND TITLE
**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
 (ADVANCED DEVELOPMENT)**

PROJECT
CP3

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
CP3 COUNTERPROLIFERATION SUPPORT (ADV TECH DEV)	10240	10245	12575							

A. Mission Description and Budget Item Justification:

Project CP3 COUNTERPROLIFERATION SUPPORT (ADV TECH DEV): The mission of the Counterproliferation Program (CP) is to address shortfalls in the Department of Defense (DoD) deployed capability to defend against and counter the proliferation of Weapons of Mass Destruction (WMD). By focusing on near term results, the CP accelerates delivery of new tools, equipment, and procedures to combat forces. Under the passive defense pillar, CP enhances the efforts of the Chemical and Biological Defense Program. This project funds a variety of programs to defend our forces against WMD, such as the Biological Detection (BIODET), Biological Non-Systems (BIO Non Sys) efforts, Critical Reagents Program (CRP), Restoration of Operations (RESTOPS) and a Planning and Development for Advanced Concept Technology Demonstrations (ACTD-PD).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

CP3**FY 2000 Accomplishments:**

- 2818 BIODET - Initiated development of biological identification system using nucleic acids to allow for a less expensive and broader biological detection capability. Transitioned upconverting phosphor technology development and explored effectiveness in assays. Tested first generation of Biological Time of Flight Mass Spectrometer in Joint Field Trial Testing. System deemed not ready for transition to prototype development.
- 382 CRP - Developed recombinant reagents to increase specificity/sensitivity and lower production costs.
- 3280 BIO Non Sys - Initiated development of automated sample preparation technology for Polymerase Chain Reaction (PCR) devices. Initiated development and evaluation of a generic detector, Time of Flight Mass Spec/Mass Spec (TOF MS/MS), multiplexed assays and associated reagents, and investigated Red Team recommendations. Supported the development of a small, portable, single assay, PCR detector for testing in Joint Field Trials.
- 3760 RESTOPS - Initiated development of next generation chemical/biological transport models (to include complex terrain and urban environment) and simulations for Commander in Chief (CINC) Logistics/Warfighting Planning Tools for use in the RestOps ACTD. Initiated development of novel universal chemical/biological decontaminants for use in the RestOps ACTD and fixed site decontamination programs.

Total 10240

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

CP3**FY 2001 Planned Program:**

- 974 ACTD-PD - Perform technology maturity evaluations for selection of technologies for Integrated Chemical Biological ACTD.
- 1779 BIODET - Produce nucleic acid primer libraries for testing and continue development of a biological detection capability using nucleic acids. Transition to CB3 for test, evaluation, and further assay development against live agents under tech transfer funds.
- 378 CRP - Continue to develop reagents (antibodies and antigens) that are critical to the development, testing, and support of CP biological detection systems.
- 5917 BIO Non Sys - Continue development and evaluation of generic detectors (TOF MS/MS, Ultra Violet) and associated algorithms to provide increased warning time for tactical battlefield applications. Continue development, testing, and evaluation of automated sample preparation technology and protocols for Polymerase Chain Reaction (PCR) devices to improve identification specificity and sensitivity in future biological systems.
- 1024 RESTOPS - Continue development of universal novel chemical/biological decontaminants for use in the RestOps ACTD and fixed site decontamination programs. Initiate synthetic environment tool for technology selection for RestOps scenarios. Initiate testing of warfare agents on RestOps scenario surfaces for use in modeling and simulation. Initiate development of maturing technologies for RestOps demonstrations.
- 173 SBIR

Total 10245

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DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development

PE NUMBER AND TITLE

0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)

PROJECT

CP3

FY 2002 Planned Program:

- 1928 ACTD-PD - Perform technology maturity evaluations, perform analysis of alternative technologies, and prepare acquisition strategy for Contamination Avoidance for Seaports of Debarkation (CASPOD) Advanced Concept Technology Demonstration.
- 2487 BIO Non Sys - Initiate development and testing of improved UV detectors, UV micro-lasers, and algorithms. Initiate prototype development and testing of an optical based detector using high affinity nucleic acid aptamer chips. Initiate challenges to detector systems in development using Red Teams. Initiate development and testing of a new improved collector/concentrator and pre-separator devices for filtering and cleaning environment air samples.
- 3684 BIO Non Sys - Continue development and evaluation of generic detectors (TOF MS/MS, UV) and associated algorithms to provide increased warning time for tactical battlefield applications. Continue development, testing, and evaluation of automated sample preparation technology and protocols for Polymerase Chain Reaction (PCR) devices to improve identification specificity and sensitivity in future biological systems.
- 3000 BIO Non Sys - Develop decontaminants, equipment, procedures, techniques, and tactics for decontamination of wide body and other aircraft.
- 1476 RESTOPS - Continue synthetic environment tool for technology selection for RestOps scenarios. Continue testing of warfare agents on RestOps scenario surfaces for use in modeling and simulation. Continue development of maturing technologies for RestOps demonstrations.

Total 12575

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**PE NUMBER AND TITLE
0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)
PROJECT
TB3

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
TB3	MEDICAL BIOLOGICAL DEFENSE (ADV TECH DEV)	17710	22980	26611						

A. Mission Description and Budget Item Justification:

Project TB3 MEDICAL BIOLOGICAL DEFENSE (ADV TECH DEV): This project funds preclinical development of safe and effective prophylaxes and therapies (vaccines and drugs) for pre- and post-exposures to biological threat agents. This project also supports the advanced technology development of diagnostic devices to rapidly diagnose exposure to biological agents in clinical samples. A broad range of technologies involved in the targeting and delivery of prophylactic and therapeutic medical countermeasures and diagnostic systems is evaluated so that the most effective countermeasures are identified for transition to Advanced Development. Transitioning candidate vaccines, therapeutics, and diagnostic technologies to Advanced Development requires the development of scientific/regulatory technical data packages to support the Food and Drug Administration (FDA) Investigational New Drug (IND) process and DoD acquisition regulations. Categories for this project include Defense Technology Objectives (DTOs); current Science and Technology Plans (STEPS) in medical biological defense (diagnostic technology, bacterial therapeutics, toxin therapeutics, viral therapeutics, bacterial vaccines, toxin vaccines, and viral vaccines), directed research efforts (Bioadhesion Research and Medical Chemical/Biological Counterterrorism Support); and efforts to transition promising medical biological defense technologies from the Defense Advanced Research Projects Agency (DARPA).

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2000 Accomplishments:**

- 1000 Common Diagnostic Systems (DTO) - Demonstrated alternative technical options that are compatible with the field medical laboratory for portable nucleic analysis of a broad range of biological threat agents in laboratory-based studies.
- 600 Medical Countermeasures for Encephalitis Viruses (DTO) - Developed vaccine candidates for Venezuelan equine encephalitis (VEE) virus type 1E and western equine encephalitis virus and tested for safety in animals.
- 1900 Medical Countermeasures for Staphylococcal Enterotoxins (SE) (DTO) - Recommended SE vaccine candidate for transition to advanced development. Defined manufacturing process and produced clinical grade SEB. Determined that neutralizing antibody response is a relevant surrogate endpoint of clinical efficacy. Completed dose and schedule studies needed for human clinical trial recommendations. Completed a pre-read package for submission to the FDA for preliminary regulatory evaluation of the SE vaccine candidate.
- 900 Multiagent Vaccines for Biological Threat Agents (DTO) - Compared and assessed the immunogenicity of individual and combined vaccine components in vaccine delivery platforms that could serve as multiagent vaccines.
- 1097 Diagnostic Technologies - Compared the performance characteristics of new medical diagnostic approaches, reagents, and devices for the rapid recognition of infections caused by *Bacillus anthracis* (*B. anthracis*), *Yersinia pestis* (*Y. pestis*), *Francisella tularensis* (*F. tularensis*), *Brucella* sp., alphaviruses, and filoviruses in laboratory-based studies. Compared technical options such as enzyme-linked immunosorbent, electrochemiluminescence, and time resolved fluorescence assays for more sensitive immunodetection of bacterial antigens and toxins in laboratory-based studies.
- 193 Therapeutics, Bacterial - Correlated in vitro antibiotic sensitivity results on *Burkholderia mallei* (*B. mallei*) (glanders) with a case study, and recommended a treatment regime for human glanders based on these data.
- 1939 Therapeutics, Toxin - Evaluated efficacy of licensed drugs (e.g., pentoxifylline) that inhibit SE-induced pro-inflammatory cytokines and are protective after a lethal SEB exposure.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2000 Accomplishments (Cont):**

- 1934 Therapeutics, Viral - Compared efficacy in cell culture of candidate antiviral drugs against more than 40 different isolates of variola at the Centers for Disease Control and Prevention. Showed protection of candidate drugs in the lethal aerosol cowpox-mouse model.
- 1143 Vaccines, Bacterial - Compared the currently licensed anthrax vaccine with an investigational next generation (recombinant) anthrax vaccine in the rabbit model; completed transitional studies to facilitate movement of the plague vaccine candidate into advanced development. Evaluated double deletion mutants of *B. melitensis* in animals and in cultured macrophages for assessment as candidate live, attenuated vaccine strains.
- 2203 Vaccines, Toxin - Finalized preparation of scientific, technical, and regulatory documentation in accordance with FDA and DoD acquisition requirements (transition documentation) supporting the Milestone (MS) I transition of the recombinant multivalent vaccine candidate for botulinum neurotoxins (serotypes A,B,C, and F) and continued process development of serotype E. Made transition recommendation for the chemically deglycosylated ricin A-chain vaccine candidate. Produced genetically engineered antigen candidates using computational design. Developed model systems to evaluate subunit inactivation.
- 1987 Vaccines, Viral - Determined that protection from one Musoke isolate of Marburg virus (MBGV) could protect from Ravn isolate in nonhuman primates.
- 1398 Bioadhesion Research - Initiated in-house and extramural review of a proposal to scientifically and technically evaluate mechanisms that block the adhesion of specific molecules thereby preventing initiation of the disease/toxic process. The proposed research is aimed toward the development of medical countermeasures to two biological warfare threats (*B. anthracis* and *Brucellae* spp.) and an infectious disease agent (Norwalk virus).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2000 Accomplishments (Cont):**

- 1416 Medical Chemical/Biological Counterterrorism Support - Requested a proposal for research on the development of technologies to identify chemical and biological warfare agents (CBWA); laboratory procedures specific for the medical diagnosis or identification of CBWA exposure; information relevant to the collection of biological samples (blood, urine, or skin biopsy); and basic training in assay use and transition. The goal is to develop assays for use by the newly constituted National Guard Mobile Analytical Laboratory System.

Total 17710**FY 2001 Planned Program:**

- 1000 Common Diagnostic Systems (DTO) - Conduct laboratory-based and field-based evaluation of portable nucleic acid analysis systems that enhance the diagnostic capabilities of field medical laboratories. Evaluate competing technical options for their operational compatibility with the field medical laboratory and a highly regulated medical center clinical laboratory.
- 1400 Medical Countermeasures for Brucella (DTO) - Determine the minimum immunogenic oral dose of the most promising live, attenuated vaccine candidate in nonhuman primates. Establish fermentation conditions for growth of live, attenuated vaccine strain and prepare research master seed and research production seed stocks using processes defined to a level consistent with the intent of current Good Manufacturing Practices (cGMP).
- 600 Medical Countermeasures for Encephalitis Viruses (DTO) - Test vaccine candidates for VEE virus type 1E and western equine encephalitis virus for efficacy in rodent animal models. Test the VEE virus type 1E candidates for safety and efficacy in the nonhuman primate model and define surrogate markers of protection for validation as acceptable markers of vaccine efficacy.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2001 Planned Program (Cont):**

- 1500 Multiagent Vaccines for Biological Threat Agents (DTO) - Test safety and efficacy in animals, of products (individually and combined) intended for use in multiagent vaccines. Develop efficient production protocols compliant with FDA regulations for scale-up production of VEE replicon platform system.
- 914 Needleless Delivery Methods for Recombinant Protein Vaccines (DTO) - Optimize needleless vaccine system components. Establish protocols for studies in animal models. Standardize assays to quantitate toxin-specific antibodies and other indicators of immunity. Standardize animal models.
- 650 Recombinant Plague Vaccine Candidate (DTO) - Prepare a technical data package to support transition to advanced development.
- 750 Recombinant Protective Antigen (rPA) Anthrax Vaccine Candidate (DTO) - Perform comparative efficacy studies in animal models with rPA with AVA. Conduct rPA- and AVA-immune passive transfer studies with homologous sera in mice and rabbits and complete technical data package supporting transition to advanced development.
- 1643 Diagnostic Technologies - Compare alternative medical diagnostic technologies and specimen-processing methods compatible with a comprehensive integrated medical diagnostic system for the rapid recognition of infections by validated biological threats (bacteria, viruses, and toxins) in laboratory-based and field-based studies.
- 818 Therapeutics, Bacterial - Test selected immunomodulators in appropriate animal models for protection against plague and glanders.
- 566 Therapeutics, Toxin - Begin stability testing of the recombinant ricin A-chain that is being used for enzymatic activity studies.
- 1257 Therapeutics, Viral - Determine dose and schedule for lead antiviral drug candidate for intravenous treatment of smallpox. Develop formulations or prodrugs to overcome problems with metabolism, bioavailability, or pharmacokinetics of compounds with otherwise acceptable antiviral profiles for orthopox and filoviruses.

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2001 Planned Program (Cont):**

- 402 Vaccines, Bacterial - Explore laboratory formulations of candidate glanders and plague vaccines using various adjuvants to enhance immunogenicity.
- 250 Vaccines, Bacterial - Explore laboratory formulations of candidate next generation anthrax vaccine using various adjuvants to enhance immunogenicity.
- 4209 Vaccines, Toxin - Complete the process development (60 L scale-up) for vaccine botulinum toxin serotypes C1 and E in the Pichia yeast system and complete efficacy studies in animal models. Initiate formulation studies on a combinatorial recombinant pentavalent botulinum toxin vaccine. Develop reagents and assays to determine the quality and quantity of botulinum toxin, SE, and ricin vaccines during process development. Prepare technical data package to support IND submission to the FDA for SE vaccine candidate.
- 1443 Vaccines, Viral - Test prime-boost vaccine candidates for Ebola virus in nonhuman primate models. Test VEE replicon-based vaccines packaged in different glycoproteins for immunogenicity and protection against Ebola virus.
- 2000 DARPA Program Transition - Evaluate promising medical biological defense technologies transitioning from DARPA such as plant-based expression of antibodies, novel antiviral agents, and novel vaccine approaches.
- 1500 Bioadhesion Research - Continue research to evaluate mechanisms that block the adhesion of specific molecules thereby preventing initiation of the disease/toxic process. The research is aimed toward the development of medical countermeasures for two biological warfare threats (B. anthracis and Brucellae spp.) and an infectious disease agent (Norwalk virus).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2001 Planned Program (Cont):**

- 1689 Medical Chemical/Biological Counterterrorism Support - Continue research on the development of technologies to identify chemical and biological warfare agents (CBWA); laboratory procedures specific for the medical diagnosis or identification of CBWA exposure; information relevant to the collection of biological samples (blood, urine, or skin biopsy); and basic training in assay use and transition. The goal is to develop assays for use by the newly constituted National Guard Mobile Analytical Laboratory System.
- 389 SBIR

Total 22980

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2002 Planned Program:**

- 1000 Common Diagnostic Systems (DTO) - Complete an analysis of alternatives of portable nucleic analysis systems for detecting and identifying nucleic acids from a broad range of biological threat agents in clinical specimens. Prepare technical data package to support submission of a medical device application to the FDA prior to transitioning the candidate to Demonstration and Validation.
- 1600 Medical Countermeasures for Brucella (DTO) - Prepare pilot lot of most promising live, attenuated vaccine candidate using processes consistent with the intent of cGMP and use the pilot vaccine lot to perform pre-IND animal studies. If more than one vaccine candidate is available, determine relative efficacy against B. melitensis in nonhuman primate aerosol challenge model.
- 800 Medical Countermeasures for Encephalitis Viruses (DTO) - Test vaccine candidates for VEE virus type 3 and eastern equine encephalitis (EEE) virus for efficacy in rodent animal models. Test the western equine encephalitis and EEE candidates for safety and efficacy in the nonhuman primate model and define surrogate markers of protection for validation as acceptable markers of vaccine efficacy.
- 1700 Multiagent Vaccines for Biological Threat Agents (DTO) - Complete testing for safety and efficacy in animal models of products (individually and combined) intended for use in a multiagent vaccines.
- 1205 Needleless Delivery Methods for Recombinant Protein Vaccines (DTO) - Define the quantitative relationships between toxin-specific antibodies or other indicators of immunity in mucosal surfaces and blood.
- 940 Recombinant Plague Vaccine Candidate (DTO) - Continue expanded animal studies for immunogenicity and efficacy including the evaluation of long term immunity in nonhuman primates. Continue to optimize formulation of the recombinant plague vaccine candidate.
- 1500 Recombinant Protective Antigen (rPA) Anthrax Vaccine Candidate (DTO) - Evaluate efficacy of rPA in non-human primates and perform passive transfer studies with human AVA-immunized sera in mice and rabbits.

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2002 Planned Program (Cont):**

- 2033 Diagnostic Technologies - Compare new diagnostic reagents, devices, and protocols in preclinical studies before transition to the regulatory -compliant medical laboratory. Evaluate candidate diagnostic technologies in field-based studies and in a highly regulated medical center clinical laboratory prior to transitioning to Demonstration and Validation.
- 955 Therapeutics, Bacterial - Evaluate in animal models selected immunomodulators in combination with efficacious antibiotics for protection against bacterial threat agents.
- 4121 Therapeutics, Toxin - Optimize formulation and pharmacodynamics of lead candidate licensed drugs that also inhibit SE-induced intoxication.
- 1910 Therapeutics, Viral - Continue evaluating formulations or prodrugs to overcome problems with metabolism, bioavailability, or pharmacokinetics of compounds with otherwise acceptable antiviral profiles for orthopox and filoviruses.
- 331 Vaccines, Bacterial - Validate correlates of immunity for protection against B. anthracis; evaluate vaccine candidates and correlates of immunity for B. mallei.
- 171 Vaccines, Toxin - Complete formulation studies on a combinatorial recombinant pentavalent botulinum toxin vaccine. Initiate formulation studies on a combinatorial SE vaccine. Complete development of reagents and assays to determine the quality and quantity of recombinant botulinum and SE vaccines during process development. Initiate the process development (60 L scale-up) for botulinum toxin serotypes D and G in the Pichia yeast system and complete efficacy studies. Initiate the process development for SE serotype A and complete efficacy studies. Initiate in vivo concept model systems for assessment of vaccine efficacy and surrogate endpoints of human clinical efficacy for botulinum toxin and SE intoxication.
- 1345 Vaccines, Viral - Determine optimal dose and schedule for vaccination against MBGV. Demonstrate in pivotal animal studies that the vaccine candidate is efficacious against aerosol infection with MBGV.

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TB3**FY 2002 Planned Program (Cont):**

- 4000 DARPA Program Transition - Expand DARPA transition efforts to include novel molecular method for selecting vaccine antigens, additional antiviral agents, and evaluation of plant-based antibodies as therapeutic agents.
- 1250 Vaccines - Enhance advanced technology development efforts toward innovative approaches for the development and delivery of next generation and generation-after-next vaccines and strategies to enhance the immune response to broad classes of biological threats.
- 1250 Medical Countermeasures - Enhance advanced technology development efforts toward the development of broad-spectrum therapeutic countermeasures for exposure to broad classes of biological threats.
- 500 Advanced Diagnostics - Enhance advanced technology development efforts toward the development of advanced medical diagnostic capabilities.

Total 26611

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001

BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA3 - Advanced Technology Development**

PE NUMBER AND TITLE
0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)

PROJECT
TC3

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
TC3 MEDICAL CHEMICAL DEFENSE (ADV TECH DEV)	9165	10270	11375							

A. Mission Description and Budget Item Justification:

Project TC3 MEDICAL CHEMICAL DEFENSE (ADV TECH DEV): This project supports the investigation of new medical countermeasures to include antidotes, pretreatment drugs, and topical skin protectants to protect U.S. forces against known and emerging CW threat agents. Capabilities are maintained for reformulation, formulation, and scale-up of candidate compounds using current good laboratory practices. Analytical stability studies and safety and efficacy screening, in addition to preclinical toxicology studies are performed prior to full-scale development of promising pretreatment or treatment compounds. Categories for this project include Defense Technology Objectives (DTOs), Science and Technology plans (Pretreatments, Therapeutics, and Diagnostics), and directed research on Low Level Chemical Agent Exposure and Fourth Generation Agents.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development

PE NUMBER AND TITLE

0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)

PROJECT

TC3

FY 2000 Accomplishments:

- 1300 Active Topical Skin Protectant (DTO) - Advanced the active topical skin protectant (aTSP) research program to MS A. Initiated studies for efficacy and safety of best candidate reactive moieties for aTSP.
- 600 Chemical Agent Prophylaxis II (DTO) - Initiated studies for efficacy and safety of lead candidate bioscavengers. Estimated the protection achievable by lead candidate scavengers in animal models.
- 4999 Medical Countermeasures against Vesicants (DTO) - Acquired drugs/compounds in forms acceptable for advanced antivesicant testing. Selected lead candidate countermeasures from in vivo and in vitro screens. Transitioned selected vesicant therapy candidates to MS A. Continued studies of off-the-shelf compound(s) safety and efficacy as therapies for vesicant-induced injury.
- 97 Diagnostics - Developed an analytical procedure that can measure blister agent sulfur mustard (HD)/DNA adducts for diagnosis of HD exposure in the warfighter for up to seven days after exposure. Developed a gas chromatography/mass spectrometry procedure that measures HD/albumin adducts in plasma with a limit of detection at 1 nM HD exposure, potentially detecting HD levels up to 30 days after exposure.
- 699 Pretreatments - Expanded physiologically based/pharmacokinetic models to include scavengers in the presence and absence of CW agents.
- 195 Therapeutics - Determined the efficacy of midazolam against nerve agent seizures in guinea pigs and rhesus monkeys. Transitioned midazolam to Advanced Development.
- 1275 Low Level Chemical Warfare Agent Exposure - Investigated the effects of sarin, pyridostigmine, botulinum toxins, and pesticides in non-human primates. Studied long-term effects to humans of exposure to nerve agent using data from research done between 1955-1975.

Total 9165

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TC3**FY 2001 Planned Program:**

- 1300 Active Topical Skin Protectant (DTO) - Demonstrate the efficacy of aTSP candidate formulations in two animal species. Evaluate effectiveness of combinations of selected reactive moieties.
- 700 Chemical Agent Prophylaxis II (DTO) - Examine scavengers derived from human proteins for immune response. Select best nerve agent bioscavenger candidate(s) based on comparison of performance in decision tree network and other differentiating studies.
- 1000 Medical Countermeasures for Vesicant Agents II (DTO) - Evaluate efficacy of lead vesicant countermeasure compounds identified in earlier screening efforts using a decision tree network. Begin vesicant therapy candidate safety and efficacy studies in two animal models.
- 56 Diagnostics - Evaluate modified advanced development equipment or technologies for far-forward screening and confirmation of exposure to blister and nerve agents. Conduct surveys of existing commercial technologies and test suitability of these items.
- 1797 Pretreatments - Test promising new catalytic scavengers for efficacy and safety in two animal models. Determine 3D x-ray crystallographic structure of human carboxylesterase and paraoxon-1.
- 4243 Therapeutics - Evaluate the efficacy of lead vesicant countermeasure compounds identified in earlier screening efforts using a drug decision approach (decision tree network). Begin vesicant candidate safety and efficacy studies in two animal models. Evaluate the optimal treatment strategy for mustard-induced ocular injury using steroid/antibiotic combinations. Evaluate commercially available off-the-shelf wound healing products to treat HD-induced injuries. Determine best anticholinergic(s) for use with midazolam as therapy for nerve agent exposure.
- 1000 Fourth Generation Agents - Select best countermeasures to Fourth Generation Agents based on comparison of protection against lethality, pathology, physiological dysfunction, and behavioral incapacitation.
- 174 SBIR

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TC3**FY 2001 Planned Program (Cont):****Total** 10270**FY 2002 Planned Program:**

- 1300 Active Topical Skin Protectant (DTO) - Complete aTSP formulation studies and demonstrate efficacy against estimated battlefield levels of chemical warfare agents. Select the best candidate(s) for transition to Demonstration and Validation.
- 1000 Chemical Agent Prophylaxis II (DTO) - Establish nonhuman primate animal models to evaluate lead scavengers for safety and efficacy. Convene Milestone I IPR to approve transition of candidate(s) scavengers to advanced development. Transition a chemical warfare agent prophylactic that will protect the warfighter for a period greater than eight hours against exposure to five times the Median Lethal Dosage (LD50) of nerve agent.
- 2000 Medical Countermeasures for Vesicant Agents II (DTO) - Select combination therapy approaches that provide highest level of protection in animal models for safety and efficacy advanced screening. Conduct pharmacokinetic and formulation studies of vesicant countermeasure candidates. Initiate collection of preclinical data that will allow a preliminary assessment of safety. Begin discussion with developer to design GLP studies.
- 829 Diagnostics - Test a prototype noninvasive monitor that measures oxyhemoglobin, deoxyhemoglobin, methemoglobin, and carboxyhemoglobin via finger, ear, or toe.
- 1310 Pretreatments - Complete development/validation of a transgenic animal model capable of producing sufficient amounts of recombinant enzyme scavenger material for clinical trials. Produce nerve agent scavengers in transgenic models and test for safety and efficacy in two animal species. Complete physiologically based pharmacokinetic model studies of expected human efficacy with various scavengers to assist in an IPR downselect process.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development**

PE NUMBER AND TITLE

**0603384BP CHEMICAL/BIOLOGICAL DEFENSE
(ADVANCED DEVELOPMENT)**

PROJECT

TC3**FY 2002 Planned Program (Cont):**

- 3436 Therapeutics - Determine optimal combination of midazolam and anticholinergic drug and order of administration to obtain maximal anticonvulsant effect against seizures in a nonhuman primate model. Conduct studies directed at obtaining Food and Drug Administration (FDA) approval for an ocular rinse that optimally treats mustard-induced injuries. Select combination therapy approaches that provide highest level of protection in animal models for safety and efficacy advanced screening. Conduct pharmacokinetics and formulation studies of vesicant countermeasure candidates. Study efficacy and safety of vesicant countermeasure candidates. Determine window of opportunity for administration of therapy(s) for blister agent HD exposure.
- 1500 Fourth Generation Agents - Begin downselect process of best available countermeasure(s) against Fourth Generation Agents. Initiate formulation and bulk production feasibility efforts.

Total 11375

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

0603884BP CHEMICAL/BIOLOGICAL DEFENSE (DEMVAL)

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Program Element (PE) Cost	67456	84992	82636							
BJ4 BIOLOGICAL DEFENSE (DEMVAL)	14640	5569	1569							
CA4 CONTAMINATION AVOIDANCE (DEMVAL)	3938	5945	8679							
CO4 COLLECTIVE PROTECTION (DEMVAL)	0	1497	4553							
CP4 COUNTERPROLIFERATION SUPPORT (DEMVAL)	16819	19839	15346							
DE4 DECONTAMINATION SYSTEMS (DEMVAL)	5464	3469	6182							
IP4 INDIVIDUAL PROTECTION (DEMVAL)	6400	17113	9855							
MB4 MEDICAL BIOLOGICAL DEFENSE (DEMVAL)	17559	29419	34565							
MC4 MEDICAL CHEMICAL DEFENSE (DEMVAL)	2636	2141	1887							

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

0603884BP CHEMICAL/BIOLOGICAL DEFENSE (DEMVAL)

A. Mission Description and Budget Item Justification: Operational forces have an immediate need to survive, safely operate, and sustain operations in a chemical and biological (CB) agent threat environment across the continuum of global, contingency, special operations/low intensity conflict, counternarcotics, and other high risk missions. This program element supports the Program Definition and Risk Reduction (PDRR) of CB defensive equipment, both medical and non-medical, and addresses various shortcomings identified in CONDUCT OF THE PERSIAN GULF WAR: Final Report to Congress, April 1992. These projects have been restructured to consolidate Joint and Service-unique tasks within four commodity areas: contamination avoidance, force protection (individual and collective), decontamination, and medical countermeasures. This program is enhanced using Counterproliferation Support Program funding. PDRR is conducted for an array of chemical/biological/toxin detection and warning systems to include the active standoff CW detector system, Artemis, (formerly known as the Joint Service Warning and Identification LIDAR Detector (JSWILD)); decontamination capabilities to include the sorbent technology, the Joint Service Fixed Site Decontamination (JSFXD) and the Joint Service Sensitive Equipment Decontamination (JSSED) programs; and transition of biological detection components (major thrusts include: (1) early warning; (2) collector concentrators; (3) generic detection; and (4) improved reagents) for the future Joint Biological Point Detection System (JBPDS) Block II and legacy system upgrades. In the medical chemical/biological defense area, PDRR is conducted for improved medical equipment, vaccines, and drugs essential to counteracting lethal and human performance degrading effects of chemical and biological agent threats. Specific items include improvements to nerve agent antidotes, topical skin protectants, anticonvulsants, biological agent diagnostics, and vaccines to protect against various Biological Warfare (BW) agents. This Program Element focuses on efforts associated with advanced technology development used to demonstrate general military utility to include program definition and risk reduction in the area of chemical/biological defense equipment and is correctly placed in Budget Activity 4.

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation

PE NUMBER AND TITLE

0603884BP CHEMICAL/BIOLOGICAL DEFENSE (DEMVAL)

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	68502	83800	69494	
Appropriated Value	69033	89800	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	-627	0	
b. SBIR/STTR	-993	0	0	
c. Omnibus or Other Above Threshold Reductions	-138	0	0	
d. Below Threshold Reprogramming	-73	-3997	0	
e. Rescissions	-373	-184	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	13142	
FY2002/2003 President's Budget	67456	84992	82636	

Change Summary Explanation:**Funding:**

FY02 - In project BJ4, realignment of the TT Bio program from BJ4 to CB3 to assure the alignment of this program into proper budget categories and also supporting efforts to accelerate the investigation and development of CBD technologies, support response to emerging threat requirements, and protect critical technology base infrastructure (-\$9,000K). In project CP4, RESTOPS ACTD (\$1,720K) for increased efforts. In project DE4, JFXSD (\$3,000K) for increased efforts. In project IP4, JSAM (\$9,800K) to support all service user requirements. In project MB4, VACCINES moved from MB5 (\$2,678K). Moved to higher priority efforts, BJ4 (-\$2K); CA4 (-\$1K); CP4 (-\$2K); IP4 (-\$2K); MB4 (-\$5K). Realigned development funding for JTCOPS from BA5 to BA4 (\$4,553K). Increase for inflation assumptions (\$403K).

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

0603884BP CHEMICAL/BIOLOGICAL DEFENSE (DEMVAL)

Schedule:

Technical:

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
BJ4

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
BJ4 BIOLOGICAL DEFENSE (DEMVAL)	14640	5569	1569							

A. Mission Description and Budget Item Justification:

Project BJ4 BIOLOGICAL DEFENSE (DEMVAL): Collection, detection, and identification of biological warfare (BW) agents are among the highest Commander in Chief/Joint Requirements Oversight Council (CINC/JROC) Counterproliferation priorities. The Department of Defense (DoD) Biological Defense mission area requires the detection and identification of biological threat agents to provide early warning capabilities at high value mobile and fixed site locations. Next generation biological detection systems will provide detection, identification, warning, and sample collection for verification of large area and/or point source biological attacks. This project supports the Technology Transition of Biological Detectors (TT Bio) from the Chemical Biological (CB) Defense Program Science & Technology base and from Defense Advanced Research Project Agency (DARPA) research efforts. This program supports the program definition and risk reduction of biological detection components, (major thrusts include: (1) early warning; (2) collector concentrators; (3) generic detection; and (4) improved reagents) for the future Joint Biological Point Detection System (JBPDS) Block II and legacy system (Portal Shield and BIDS) upgrades. This program also supports the Critical Reagent Program (CRP) for the development of advanced reagents for legacy (i.e. Biological Integrated Detection System (BIDS), Air Base/Port Biological Detection (Portal Shield)) and future detection systems that meet the established Office of the Joint Chiefs of Staff (OJCS) threat list. JBPDS Block II FY00 and FY01 BJ4 funding has been consolidated in the TT Bio Program. FY01 CRP BJ4 funding has also been consolidated into the TT Bio Program.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

BJ4**FY 2000 Accomplishments:**

- 1705 CRP - Developed advanced reagents to support the JBPDS and legacy system (i.e. BIDS and Portal Shield) upgrades.
- 4400 JBPDS - Completed Biological Agent Warning Sensor (BAWS) design and integration. The BAWS detector greatly reduces system false detection rate and consumable usage.
- 2650 JBPDS - Completed design study and analysis of JBPDS components to include the recently integrated Biological Agent Warning Sensor (BAWS).
- 2692 JBPDS - Completed design, optimization, and ruggedization of the collector and identification components. Completed initial integration of collection, trigger/detection and identification components and initial operating software into a fully automated biosuite.
- 2258 JBPDS - Completed twenty-six engineering design tests (EDT) that verified system requirements were met.
- 935 TT Bio - Conducted hardware/software development, and early test and evaluation of two advanced biological detection components (Time of Flight Mass Spec/Mass Spec (TOF MS/MS) and Ultraviolet (UV) Trigger). Focus was on JBPDS Block II candidate components and legacy system upgrades.

Total 14640**FY 2001 Planned Program:**

- 2098 JBPDS - Initiate modeling, design, fabrication, and test of next generation BAWS.
- 2531 TT Bio - Initiate system development and integration of a lightweight early warning system candidate for the Joint Biological Standoff Detection System (JBSDS).
- 846 TT Bio - Continue development of critical reagents.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

BJ4**FY 2001 Planned Program (Cont):**

- 94 SBIR

Total 5569**FY 2002 Planned Program:**

- 990 TT Bio - Complete system development and integration of the lightweight, early warning, JBSDS system.
- 579 TT Bio - Initiate testing of the integrated, lightweight, early warning system.

Total 1569

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June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
BJ4**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
BJ5 BIOLOGICAL DEFENSE (EMD)	13575	5950	18178							
CP4 COUNTERPROLIFERATION SUPPORT (DEMVAL)	16819	19839	15346							
CP5 COUNTERPROLIFERATION SUPPORT (EMD)	6784	0	0							
JP0100 JOINT BIO POINT DETECTION SYSTEM (JBPDs)	18163	28881	38579							
JPO210 CRITICAL REAGENTS PROGRAM (CRP)	2399	2293	1926							

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

BJ4**C. Acquisition Strategy:**

TT Bio

This program will ensure system development and integration of the most promising advanced biological detection components (major thrusts include: (1) early warning; (2) collector concentrators; (3) generic detection; and (4) improved reagents) for horizontal technology insertion and transition into the Joint Biological Point Detection System (JBPDS) Block II; the Joint Biological Remote Early Warning System (JBREWS), the Joint Biological Standoff Detection System (JBSDS) Engineering Manufacturing Development (EMD), and other fielded legacy systems. This program will utilize a combination of government agencies: (1) Soldier Biological Chemical Command (SBCCOM); (2) U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID); (3) Naval Medical Research Center (NMRC); and (4) contractors to develop new reagents (immuno assay/nucleic acid) for the detection of high threat BW agents.

CRP

In-house and contractor development and testing of critical reagents.

JBPDS

Contractor design, fabrication, testing and system integration of critical collections, detection and identification components.

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
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PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT
BJ4

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
CRP												
ITF-6A List Complete				4Q								
JBPDS												
Perform Pre Production Qualification Test (PPQT)			3Q									
Perform Initial Operational Test and Evaluation							3Q					
Block I Milestone III								4Q				
TT Bio												
Joint Field Trials (JFT 7)								4Q				
Transition Block II Components								4Q				
Joint Field Trials (JFT 8)												4Q
Transition Early Warning JBSDS Engineering and Manufacturing Development (EMD)												4Q

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

BJ4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBPDS													
ES S - Early Prototype - Develop and Purchase Stimulator	MIPR	Lincoln Laboratories, Lexington, MA	U	3657	1238	NONE	0	NONE			0	4895	0
TT Bio													
HW S - TT Bio JBSDS LIDAR	MIPR	Systems Engineering Solutions Inc, Dunn Loring, VA	U	0	2531	Jan-01	1410	Jan-02			0	3941	0
HW C - TT Bio	MIPR	USAMRIID, Ft. Detrick, MD	U	469	246	Jan-01	0	NONE			0	715	0
SW SB - TT Bio	MIPR	NMRI, Bethesda, MD	U	214	200	Jan-01	0	NONE			0	414	0
HW C - TT Bio	MIPR	SBCCOM, Edgewood, MD	U	0	100	Jan-01	0	NONE			0	100	0
HW C - TT Bio	MIPR	Dugway Proving Ground, UT	U	150	150	Jan-01	0	NONE			0	300	0
Subtotal I. Product Development:				4490	4465		1410				0	10365	

Remarks:

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
June 2001

BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA4 - Demonstration and Validation**

PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
 (DEMVAL)**

PROJECT
BJ4

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBPDS													
ES S - BAWS Integration	MIPR	SBCCOM, Edgewood, MD	U	2268	498	NONE	0	NONE			0	2766	0
Subtotal II. Support Costs:				2268	498		0				0	2766	

Remarks:

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBPDS													
OTHT SB - Early Operational Assessment for Block II	MIPR	Lincoln Laboratories, Lexington, MA	U	983	362	NONE	0	NONE			0	1345	0
TT Bio													
DTE S - TT Bio	MIPR	Dugway Proving Ground, UT	U	0	0	NONE	0	NONE			0	0	0
Subtotal III. Test and Evaluation:				983	362		0				0	1345	

Remarks:

Project BJ4

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Exhibit R-3 (PE 0603884BP)

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
BJ4

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
TT Bio													
PM/MS S - TT Bio	Various	JPO-BD, Falls Church, VA	U	51	150	Oct-01	159	Oct-01			0	360	0
ZSBIR													
SBIR - Aggregated from Z-SBIR-SBIR	PO	HQ, AMC Alexandria, VA	U	0	94	NONE	0	NONE			0	94	0
Subtotal IV. Management Services:				51	244		159				0	454	
Remarks:													
TOTAL PROJECT COST:				7792	5569		1569				0	14930	

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
CA4

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
CA4	CONTAMINATION AVOIDANCE (DEMVAL)	3938	5945	8679						

A. Mission Description and Budget Item Justification:

Project CA4 CONTAMINATION AVOIDANCE (DEMVAL): This project conducts Program Definition and Risk Reduction (PDRR) of reconnaissance, detection, and identification equipment. Items of equipment in this project are: (1) the Nuclear, Biological and Chemical Reconnaissance System (NBCRS) Fox Training System and (2) Artemis (formerly known as JSWILD) and (3) the Chemical Biological Mass Spectrometer (CBMS). The NBCRS Fox Training System will operate on virtual terrain and simulate Nuclear, Biological and Chemical threat to allow integrated training of NBCRS Fox crews. Artemis will be a real time, modular, standoff detection system employing a mix of active and passive detection technologies for chemical detection at ranges on the order of 20 kilometers (km) or more. Fiscal Year (FY) 2001 is addressed within item CP4 - Counterproliferation Support (DEMVAL). The CBMS is a detector capable of both biological and chemical agent detection and identification. The CBMS Block I system is a component of the P3I Biological Integrated Detection System (BIDS). The CBMS Block II system is an improved system that is being developed for inclusion in the Fox Block II system (IAV-NBCRV) and the Joint Service Lightweight NBCRS system. The CBMS II is being further enhanced to allow operation as a stand-alone system.

FY 2000 Accomplishments:

- 300 NBCRS Blk I Fox (Training System) - Conducted System Engineering (SE) and tradeoff studies. SE and tradeoff study identified existing Government-Commercial-Off-the-Shelf (GOTS) and Commercial-Off-the-Shelf (COTS) hardware and software for potential use in the Fox Trainer. Identified user requirements and needed capabilities.
- 3338 NBCRS Blk I Fox (Training System) - Fabricated/integrated two NBCRS Fox Training Systems for installation at Fort Hood, Texas.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

CA4**FY 2000 Accomplishments (Cont):**

- 200 NBCRS Blk I Fox (Training System) - Installed two NBCRS Fox Training Systems in the Close Combat Tactical Trainer (CCTT) Facility at Fort Hood, Texas.
- 100 NBCRS Blk I Fox (Training System) - Tested NBCRS Fox Training Systems at Fort Hood, Texas. Testing included software validation, technical tests on all system components, a Limited User Test, and a maintenance evaluation.

Total 3938**FY 2001 Planned Program:**

- 1949 CBMS - Initiate design to update CBMS Block II for fixed site and stand-alone applications.
- 3595 NBCRS Blk I Fox (Training System) - Fabricate/integrate two NBCRS Fox Training Systems for installation at Fort Polk, LA.
- 200 NBCRS Blk I Fox (Training System) - Install two NBCRS Fox Training Systems at Fort Polk, LA.
- 100 NBCRS Blk I Fox (Training System) - Test NBCRS Fox Training Systems. Testing includes software validation, technical tests on all system components, a Limited User Test, and a maintenance evaluation. Trainers are designed and tested uniquely for each facility installation.
- 101 SBIR

Total 5945

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

CA4**FY 2002 Planned Program:**

- 1954 ARTEMIS - Complete performance specification and update the Acquisition Strategy, Acquisition Plan, Acquisition Program Baseline, and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance Support Plan. Prepare source documentation for Milestone (MS) B. Maintain document library and information network for all data, research, and other program information. Finalize and issue Request for Proposal (RFP), conduct source selection for prototype development contractor, conduct review (Alternative Systems Review) of draft system work breakdown structure, preliminary functional baseline, and draft system specification.
- 725 ARTEMIS - Finalize Systems Architecture and Systems Specification through a Joint Systems Engineering Integrated Product Team (IPT). Analyze the Operational Requirements Document (ORD) and translate it into performance specifications for prototype development. Conduct risk analyses.
- 750 ARTEMIS - Update Simulation Based Acquisition Strategy and Simulation Support Plan to identify the effective use of modeling and simulation throughout the system life cycle. Update/validate the virtual prototype model to support design of early prototype system. Update cost model to reflect new system architecture. Evaluate infrared spectra scene generator equipment in support of virtual testing.
- 622 ARTEMIS - Conduct, as an integral part of the systems engineering process, a supportability analysis. Conduct initial Joint Training Planning Process Methodology and develop initial Joint System Training Plan. Develop acquisition logistics support plan for MS B through a Joint Logistics / Product Support IPT.
- 1025 ARTEMIS - Develop test methodology in support of the test strategy and finalize initial Test & Evaluation Master Plan for MS B through a Joint Test & Evaluation IPT.
- 3603 ARTEMIS - Further develop key components of a solid state LIDAR system to develop a system architecture and to reduce overall programmatic risk by utilizing Advance Component Development. The two key components considered as high risk are the solid state 8-12 micron laser and a non-consumable detector. Perform testing of these components to validate their performance.

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
CA4FY 2002 Planned Program (Cont):
Total 8679**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
CA5 CONTAMINATION AVOIDANCE (EMD)	61717	61208	64099							
G47101 JOINT WARNING & REPORTING NETWORK (JWARN)	9639	8483	0							
JA0001 JT SVC LASER ACTIVE STAND-OFF CM DET (JSWILD)	0	0	0							
JF0100 JOINT CHEM AGENT DETECTOR (JCAD)	0	0	0							
M98801 AUTO CHEMICAL AGENT ALARM (ACADA), M22	41445	69434	595							
MA0601 RECON SYSTEM, FOX NBC (NBCRS) MODS	25591	57808	6356							
MC0100 JT SVC LTWT NBC RECON SYS (JSLNBCRS)	0	0	0							

Project CA4

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PROJECT

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B. Other Program Funding Summary (Cont):

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
S10801 JS LTWT STANDOFF CW AGT DETECTOR (JSLSCAD)	0	0	10399							

C. Acquisition Strategy:

NBCRS BLK I

Fox (Training System) Task order to ITT Industries to develop and deliver two NBCRS Fox Trainers to Fort Hood, TX, and two NBCRS Fox Trainers to Fort Polk, LA. Trainers operate on virtual terrain and simulate Nuclear, Biological and Chemical threat to allow integrated training of NBCRS Fox crews.

ARTEMIS

Formerly known as JSWILD. During the Concept Exploration Phase an Analysis of Alternatives (AoA) will be conducted. If the AoA results support a mature technology, the program will proceed with a competitive RFP for contractor integration and prototype development. Once prototypes prove successful, leading to a MS C and Full Rate Production (FRP) decision, a follow-on competitive fixed-fee contract for production of systems to meet all Services' requirements will be awarded.



The CBMS I

PDRR phase was developed under a task order contract with Bruker Industries. The system was type-classified as part of the P3I BIDS system. The CBMS II (EMD phase) was developed under an interagency agreement with Oak Ridge National Lab, with Orbital Sciences Corp as the main subcontractor. The system will be type classified as a component of the Fox Block II system (IAV-NBCRV) and the Joint Service Lightweight NBCRS system. A PDRR effort is being initiated to configure the system as a stand-alone system.

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D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
ARTEMIS												
Concept Exploration (CE)	1Q								2Q			
Conduct Analysis of Alternatives							3Q					
Analysis of Alternatives (AoA) Report							3Q					
Advance Component Development IPR							4Q					
Advance Component Development							4Q			2Q		
Release Draft Request for Proposal (RFP)							4Q					
Alternative Systems Review (ASR)										2Q		
Milestone B Decision										2Q		
Release Final Request for Proposal (RFP)										2Q		
NBCRSBLKI												

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PROJECT
CA4

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
NBCRSBLKI (Cont)												
Fox Trainer Development Task Order			3Q									
Fox Trainer System Engineering & Tradeoff Study			3Q					2Q				
Fox Trainer Hardware Procurement, Fort Hood Systems						2Q	3Q					
Fox Trainer Hardware Fabrication and Procurement, Fort Polk Systems								4Q	1Q			
Fox Trainer Software Development, Fort Polk Systems								4Q	1Q			

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
CA4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ARTEMIS													
HW S - Early Prototype - Development	C/CPFF	TBD	C	0	0	NONE	0	NONE			2678	2678	4075
SW S - Early Prototype - Development	C/CPFF	TBD	C	0	0	NONE	0	NONE			1887	1887	3000
HW C - Solid State Laser - Mature Technology in 8-12 Micron Range	C/CPFF	TBD	C	0	0	NONE	2000	Oct-01			0	2000	2000
HW C - Solid State Laser - Mature Non-consumable Detector	C/CPFF	TBD	C	0	0	NONE	1103	Oct-01			0	1103	1103
HW GFPP - JSLSCAD - NSWCDD	Reqn	NSWCDD, Dahlgren, VA	U	0	0	NONE	0	NONE			300	300	600
HW S - Early Prototype - System Integration	C/CPFF	TBD	C	0	0	NONE	0	NONE			2200	2200	3050
CBMS													
HW S - CBMS - Initiate and Upgrade CBMS Block II for Fixed Site and Stand Alone Application	C/CPFF	Oak Ridge National Lab, Oak Ridge, TN (OSC, Pomona, CA - sub)	C	0	1250	Oct-01	0	NONE			0	1250	0
NBCRSBLKI													
HW C - Fabricated/Integrated Two NBCRS Fox Training Systems	SS/CPFF	ITT Industries, Alexandria, VA	C	3138	3471	Mar-01	0	NONE			0	6609	6540

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PROJECT

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I. Product Development- Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
HW C - Installed Two NBCRS Fox Training Systems in the Close Combat Tactical Trainer (CCTT) Facility at Fort Hood, TX	C/CPFF	ITT Industries, Alexandria, VA	C	200	200	Mar-01	0	NONE			0	400	400
Subtotal I. Product Development:				3338	4921		3103				7065	18427	

Remarks:

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(DEMVAL)**PROJECT
CA4

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ARTEMIS													
ES S - IPT - Joint Test and Evaluation Plan	MIPR	Various	U	0	0	NONE	600	Oct-01			2400	3000	3380
ES S - IPT - Test Support	MIPR	DPG, Dugway, UT	U	0	0	NONE	200	Oct-01			950	1150	1250
ES S - IPT - Test Methodology	C/CPFF	TBD	C	0	0	NONE	225	Oct-01			395	620	745
ILS S - IPT - Product Support	MIPR	Various	U	0	0	NONE	450	Oct-01			1500	1950	2109
ILS S - IPT - Product Support	C/CPFF	Battelle, Arlington, VA	C	0	0	NONE	172	Oct-01			900	1072	1184
ES S - Early Prototype - Simulation Support Plan	WR	NSWCDD, Dahlgren, VA	U	0	0	NONE	100	Oct-01			200	300	450
ES S - Early Prototype - Develop and Purchase Stimulator	C/CPFF	TBD	C	0	0	NONE	650	Oct-01			2100	2750	3705
ES S - IPT - Systems Engineering	MIPR	Various	U	0	0	NONE	600	Oct-01			1688	2288	2738
ES S - IPT - Systems Engineering Support	C/CPFF	TBD	C	0	0	NONE	125	Oct-01			563	688	838
TD/D S - Early Prototype - Drawings	C/CPFF	TBD	C	0	0	NONE	0	NONE			450	450	600
CBMS													
ES S - CBMS - Contract Engineering Support	C/CPFF	Oak Ridge National Lab, Oak Ridge, TN (OSC, Pomona, CA - sub)	C	0	293	Oct-01	0	NONE			0	293	0
Subtotal II. Support Costs:				0	293		3122				11146	14561	

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II. Support Costs - Cont

Remarks:

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PROJECT
CA4

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ARTEMIS													
OTHT C - Solid State Laser - Developmental Testing	C/CPFF	TBD	C	0	0	NONE	500	Oct-01			0	500	500
DTE S - Early Prototype - Purchase Additional Ground Equipment	MIPR	DPG, Dugway, UT	U	0	0	NONE	0	NONE			0	0	150
DTE S - Early Prototype - Developmental Testing	C/CPFF	TBD	C	0	0	NONE	0	NONE			1250	1250	1500
CBMS													
DTE S - CBMS - Conduct Environmental Testing to Verify Stand Alone Performance	C/CPFF	Oak Ridge National Lab, Oak Ridge, TN (OSC, Pomona, CA - sub)	C	0	250	Oct-01	0	NONE			0	250	0
NBCRSBLKI													
OTE C - Operational Testing Conducted On All System Components	SS/CPFF	ITT Industries, Alexandria, VA	C	100	100	Mar-01	0	NONE			0	200	200
Subtotal III. Test and Evaluation:				100	350		500				1250	2200	

Remarks: NBCRSBLK1 (Training System) - Testing includes software validation, a Limited User Test, and a maintenance evaluation. Trainers are designed and tested uniquely for each installation. This includes systems integration with the Close Combat Tactical Training Center.

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PROJECT

CA4

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ARTEMIS													
PM/MS S - Program Office - Planning & Programming	WR	NSWCDD, Dahlgren, VA	U	0	0	NONE	917	Oct-01			7200	8117	8910
PM/MS S - Program Office - Program Support	C/CPFF	Battelle, Arlington, VA	C	0	0	NONE	937	Oct-01			8100	9037	10021
PM/MS S - IPT - Management	MIPR	Various	U	0	0	NONE	100	Oct-01			500	600	700
CBMS													
PM/MS C - Program Management	Various	Oak Ridge National Lab, Oak Ridge, TN (OSC, Pomona, CA - sub)	U	0	156	Oct-00	0	NONE			0	156	0
NBCRSBLKI													
PM/MS S - Conduct Program/Project Management	PO	PM NBCDS, APG, MD & Fort Monmouth, NJ	U	122	124	Oct-01	0	NONE			0	246	122
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	101	Oct-00	0	NONE			0	101	105
Subtotal IV. Management Services:				122	381		1954				15800	18257	

Remarks:

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BUDGET ACTIVITY RDT&E DEFENSE-WIDE/ BA4 - Demonstration and Validation				PE NUMBER AND TITLE 0603884BP CHEMICAL/BIOLOGICAL DEFENSE (DEMVAL)			PROJECT CA4						
TOTAL PROJECT COST:				3560	5945		8679				35261	53445	
Project CA4													
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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAl)**PROJECT
CO4

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
CO4	COLLECTIVE PROTECTION (DEMVAl)	0	1497	4553						

A. Mission Description and Budget Item Justification:

Project CO4 COLLECTIVE PROTECTION (DEMVAl): This project conducts Program Definition and Risk Reduction of CB collective protection systems that are smaller, lighter, less costly and more easily supported logistically at the crew, unit, ship, and aircraft level.

The Joint Transportable Collective Protection System (JTCOPS) will use the latest technologies to provide the next generation of lightweight, modular, self-supporting collective protection shelter systems. JTCOPS block I will backfit selected existing standard military tent systems with a collective protection capability beyond that which is currently available. JTCOPS Block II will fully integrate next-generation collective protection into future military tent systems to provide NBC protection that is inherent to the system.

FY 2000 Accomplishments: None

FY 2001 Planned Program:

- 1472 JTCOPS - Revise the acquisition strategy to a block approach to align the program with user priorities. Revise the Milestone I documentation and the development contract request for proposals (RFP) for Block I. Conduct Milestone I decision review for Block I. Release RFP, evaluate proposals, and make source selection decision for Block I.
- 25 SBIR

Total 1497

Project CO4

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**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

CO4**FY 2002 Planned Program:**

- 4553 JTCOPS - Award development contract for Block I. Conduct the entire design phase of the contract and begin the prototype fabrication phase.

Total 4553**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
JN0022 JT TRANSPORTABLE COLLECTIVE PROTECTION SHELTER	0	0	0							

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PROJECT

CO4**C. Acquisition Strategy:**

JCPE

This program will utilize the modification clause under DoD 5000 to provide solutions to current deficiencies in fielded collective protection equipment. The various efforts under JCPE will use market analysis and tradeoff studies to determine the optimum configuration for any modifications or improvements. All modified components will be contractor fabricated and in-house tested to ensure performance compatibility. Performance and/or procurement specifications will be updated to ensure that modifications are included in future acquisitions. Whenever possible, modified components will be integrated into existing systems via replacement spares.


JTCOPS

Block I will develop a new collective protection capability for existing DoD shelters. A competitive contract will be awarded for the design and prototype fabrication phase, with options for Low Rate Initial Production (LRIP) and production. After successful completion of Development Testing and the Milestone II decision, the LRIP option will be exercised to procure prototypes for Operational Testing (OT). After completion of OT and the Milestone III decision, the production option on the contract will be exercised. Block II is scheduled to begin in FY05.

SCPE

In-house/contract design and fabrication of prototype components with in-house testing. Equipment will be procured as part of new ship construction using Ship Conversion Navy (SCN) funds.

D. Schedule Profile:

	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JTCOPS												
Milestone I - Block I						2Q						
Design and Fabricate Prototypes for Development Test (DT) - Block I									1Q			4Q

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BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

CO4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JTCOPS													
HW S - Block I System Design and Test Item Fabrication with Options for LRIP and Production	C/CPFF	TBD	C	0	0	NONE	3000	1Q FY02			0	3000	0
Subtotal I. Product Development:				0	0		3000				0	3000	

Remarks:

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(DEMVAL)**

PROJECT

CO4

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JTCOPS													
ES S - Block I Proposal Evaluations and Design Reviews	MIPR	See remarks	U	0	448	1Q FY01	500	1Q FY02			0	948	0
ILS S - Block I ILS Management Activities	MIPR	SBCCOM - Rock Island, IL	U	0	200	1Q FY01	300	1Q FY02			0	500	0
TD/D S - Block I Integrated Logistic Support Data	C/CPFF	TBD	C	0	0	NONE	100	NONE			0	100	0
Subtotal II. Support Costs:				0	648		900				0	1548	

Remarks: JTCOPS - Performing Activities & Locations: SBCCOM - Natick, MA; SBCCOM - Edgewood, MD; Brooks AFB - San Antonio, TX; NSWCDD - Dahlgren, VA; MARCORSYSCOM - Quantico, VA; CECOM - Ft. Belvoir, VA

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(DEMVAL)**

PROJECT

CO4

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JTCOPS													
DTE S - Block I Development Test	MIPR	TBD	U	0	0	NONE	0	NONE			0	0	0
Subtotal III. Test and Evaluation:				0	0		0				0	0	

Remarks:

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(DEMVAL)**PROJECT
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IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JTCOPS													
PM/MS S - Block I Overall Program Management and Integrated Product Team Chair Responsibilities	Allot	SBCCOM - Natick, MA	U	0	200	1Q FY01	200	1Q FY02			0	400	0
PM/MS SB - Block I Integrated Product Team Participation	PO	See Remarks	U	0	624	1Q FY01	453	1Q FY02			0	1077	0
ZSBIR													
SBIR - Aggregated from SBIR	MIPR	HQ AMC, Alexandria, VA	U	0	25	Oct-00	0	NONE			0	25	26
Subtotal IV. Management Services:				0	849		653				0	1502	

Remarks: JTCOPS - Performing Activities & Locations: SBCCOM - Edgewood, MD; Brooks AFB - San Antonio, TX; NSWCDD - Dahlgren, VA; MARCORSYSCOM - Quantico, VA

TOTAL PROJECT COST:	0	1497		453				0	6050	
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BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAl)** PROJECT
CP4

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
CP4	COUNTERPROLIFERATION SUPPORT (DEMVAl)	16819	19839	15346						

A. Mission Description and Budget Item Justification:

Project CP4 COUNTERPROLIFERATION SUPPORT (DEMVAl): Providing full dimensional protection to deployed forces and critical fixed sites, to include Aerial Ports of Debarkation (APODs) and Sea Ports of Debarkation (SPODs), under threat of chemical or biological attack is one of the highest Commanders-in-Chief (CINC) priorities. Joint Vision 2010 states that power projection from the U.S. - achieved through rapid strategic mobility and enabled by overseas presence - will likely remain the fundamental concept of our future force. Fixed installations (seaports, aerial ports, logistics nodes, etc.) are critical to this mode of operation and are especially vulnerable to attack with Chemical and Biological (CB) weapons. Future adversaries will likely use CB weapons to deny U.S. and Allied use of these facilities. U.S. forces, both mobile and at fixed sites, must be able to survive CB attacks and quickly recover to continue operations. This project supports the accelerated fielding of operational capabilities (technology, Concept of Operations (CONOPS), and automation tools) to CINCs through the Advanced Concept Technology Demonstration (ACTD) process.

The Joint Biological Remote Early Warning System (JBREWS) ACTD addresses the need for an early warning, detection and identification of Biological Warfare (BW) agents in assembly areas. The objectives of this ACTD were to (1) evaluate military utility of Remote Early Warning for BW agent attacks; (2) provide the sponsoring CINC an interim residual capability to detect, identify, and warn forces who may be exposed to BW agents; and (3) develop CONOPS and refine tactics, techniques and procedures. The JBREWS technology residual will not be fielded.

The Restoration of Operations (RestOps) ACTD investigates the impact of technology and CONOPS on restoring operating tempo at an airfield following a CB attack. RestOps are those pre/during/post attack actions necessary to protect against and then immediately react to the consequences of a CB attack on an airfield so that the facility can resume functioning with a minimum of down time. This ACTD will provide technology, software support, and techniques and procedures so that a base commander can minimize the impact of a CB attack on military operations.

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PROJECT

CP4

The planned Integrated Chemical Biological ACTD provides technologies, tools, tactics and procedures for the recovery of throughput operations after a chemical or biological attack in a Seaport during times of a major logistics operation.

The JMANS program addresses the need for detect-to-warn for early entry Joint Forces, and NBC asset management through multimission and airborne sensor integration, data fusion, and battlespace management.

The Artemis program's (formerly known as JSWILD) objective is to develop a near-real time, standoff, on-the-move, CW agent detection and identification capability, with 360-degree coverage, from a variety of platforms, at ranges of 20 km or more. Fiscal Years (FY) 2002 and 2003 are addressed for the Artemis program within item CA4 - Contamination Avoidance (DEMVAL).

FY 2000 Accomplishments:

- 6596 JBREWS ACTD - Completed Hardware/Software development, Live Agent Chamber Test, and Demonstration Test.
- 454 JBREWS ACTD - Continued fabrication of ACTD residuals.
- 2800 RestOps ACTD - Conducted Joint Chemical Field Trials (developmental tests) on selected collective protection, individual protection, detection, decontamination, and medical countermeasure technologies.
- 1947 RestOps ACTD - Completed development of site chemical and biological exercise scenario in preparation for the RestOps Air Base baselining exercise.
- 1564 RestOps ACTD - Conducted scenario and evaluation development for use in the RestOps baselining exercise, preliminary, and final demonstrations.
- 3458 RestOps ACTD - Developed the Implementation Directive, Management Plan, management structure, and methodologies for technology selection analysis, chemical field test assessment, and operational capability assessment for use during RestOps.

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BUDGET ACTIVITY

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(DEMVAL)

PROJECT

CP4

FY 2000 Accomplishments (Cont):

Total 16819

FY 2001 Planned Program:

- 1814 ARTEMIS - Complete Analysis of Alternatives (including modeling and simulation) to validate technology alternatives. Conduct Independent Total Ownership Cost (TOC) Analysis.
- 350 ARTEMIS - Develop initial systems architecture and draft systems specification through a Joint Service Systems Engineering Integrated Product Team (IPT).
- 721 ARTEMIS - Generate program acquisition strategy and documentation. Establish test strategy, project engineering, and develop draft request for proposal, in preparation for Milestone B. Perform financial management, scheduling, planning, and reporting.
- 462 JBREWS ACTD - Conduct in-service engineering for product improvement of the JBREWS Sample Identification Unit (SIU), power systems, and C4I, and support with modeling.
- 724 JBREWS ACTD - Provide operational and training SIU assay cartridges for the Operational Testing Period.
- 803 JMANS - Initiate multimission sensor field trials to demonstrate CB detection capabilities with radar systems.
- 424 JMANS - Initiate comparative analysis to select lookdown chemical sensor.
- 733 JMANS - Initiate development of NBC reachback capability and a theater level NBC data fusion C4ISR system.
- 300 RestOps ACTD - Complete Joint Chemical Field Trials (development tests) and technology assessments on RestOps selected technologies at Dugway Proving Ground.
- 350 RestOps ACTD - Conduct CONOPS validation for future use in the RestOps preliminary and final demonstrations.

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PROJECT

CP4**FY 2001 Planned Program (Cont):**

- 4956 RestOps ACTD - Begin procurement on selected decontamination, detection, protection, medical countermeasures, and sensor integration equipment/systems for the RestOps limited utility assessments, preliminary, and final demonstrations.
- 3539 RestOps ACTD - Conduct the RestOps Air Base baseline exercise.
- 2429 RestOps ACTD - Conduct user Operational/Functional Testing for Limited Utility Assessment (LUA) of the RestOps selected technologies satisfactorily making it through the Joint Chemical Field Trials at Dugway Proving Ground.
- 1898 RestOps ACTD - Continue technology selection support, initiate procurement activity support, begin policy initiatives, continue information technology integration efforts and initiate planning for the RestOps technology transition.
- 336 SBIR

Total 19839**FY 2002 Planned Program:**

- 589 RestOps ACTD - Initiate user training on new technologies in preparation for RestOps preliminary and final demonstrations.
- 590 RestOps ACTD - Conduct user preliminary demonstrations at RestOps Operational Manager selected Air Bases.
- 9500 RestOps ACTD - Complete procurement of selected technologies for decontamination, detection, protection, medical countermeasures, and sensor integration hardware and software.
- 2500 RestOps ACTD - Continue procurement support, policy initiatives, transition planning, and information technology integration support.

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(DEMVAL)**

PROJECT

CP4**FY 2002 Planned Program (Cont):**

- 2167 RestOps ACTD - Conduct technology systems integration and systems tests, final CONOPS evaluation, and complete Limited Utility Assessment reports.

Total 15346**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
BJ4 BIOLOGICAL DEFENSE (DEMVAL)	14640	5569	1569							
BJ5 BIOLOGICAL DEFENSE (EMD)	13575	5950	18178							
CP3 COUNTERPROLIFERATION SUPPORT (ADV TECH DEV)	10240	10245	12575							
CP5 COUNTERPROLIFERATION SUPPORT (EMD)	6784	0	0							
JPO210 CRITICAL REAGENTS PROGRAM (CRP)	2399	2293	1926							
JPO230 PORTAL SHIELD EQUIPMENT	4751	26315	3892							

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(DEMVAL)**

PROJECT

CP4**C. Acquisition Strategy:**

ACTDs

Utilize non-traditional acquisition Advanced Concept Technology Demonstration (ACTD) to rapidly provide the CINC with operational capabilities to counter the battlefield effects of chemical and biological attacks, to include the development of concepts of operation and doctrine associated with biological remote early warning and restoration of operations at fixed sites.



Artemis

During the Concept Exploration Phase an Analysis of Alternatives (AoA) will be conducted. If the AoA results support a mature technology, the program will proceed with a competitive RFP for contractor integration and prototype development. Once prototypes prove successful, leading to a MS C and Full Rate Production (FRP) decision, a follow-on competitive fixed-fee contract for production of systems to meet all Services' requirements will be awarded.

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(DEMVAL)**PROJECT
CP4

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
ARTEMIS												
Concept Exploration (CE)	1Q								2Q			
Conduct Analysis of Alternatives							3Q					
Analysis of Alternatives (AoA) Report							3Q					
Advance Component Development IPR							4Q					
Advance Component Development							4Q			2Q		
Release Draft Request for Proposal (RFP)							4Q					
Alternative Systems Review (ASR)										2Q		
Milestone B Decision										2Q		
Release Final Request for Proposal (RFP)										2Q		
JBREWS												

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D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JBREWS (Cont)												
Conduct JBREWS Advanced Concept Technology Demonstration (ACTD) Demonstration				4Q								
JBREWS Advanced Concept Technology Demonstration (ACTD) - Fielding Support (CLS)												4Q
JMANS												
ACTD Development					1Q			4Q				
Conduct Radar Multimission Sensor Field Trials							3Q	4Q				
Downselect Lookdown Sensor						2Q			4Q			
Develop Theater Level C4ISR System						2Q			4Q			
RESTOPS												




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(DEMVAl)**

PROJECT
CP4

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
RESTOPS (Cont)												
Scenario/Exercise Development										2Q		
Joint Chemical Field Trials					1Q							
Concept of Operations (CONOPS) Development				4Q								
Concept of Operations (CONOPS) Validation					1Q	2Q						
Functional Test					1Q					2Q		
Baseline Exercise						2Q						
Procurement						2Q			1Q			
Training									1Q			
Preliminary Demonstration										2Q		

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(DEMVAL)**PROJECT
CP4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBREWS													
SW SB - Develop communication System Software	MIPR	LLNL, Livermore, CA	F	1996	0	NONE	0	NONE			0	1996	0
HW SB - Develop Sensor Network Command Post	MIPR	LANL, Los Alamos, NM	F	1304	0	NONE	0	NONE			0	1304	0
HW SB - Refurbish SR-BSDS	MIPR	SBCCOM, Edgewood, MD	U	950	0	NONE	0	NONE			0	950	0
JMANS													
HW SB - Comparative Analysis and Selection of Lookdown Sensor	MIPR	SBCCOM, APG, MD	U	0	265	2Q FY01	0	NONE			0	265	0
SW SB - Development of NBC Reachback Capability and a Theater Level NBC Data Fusion C4ISR System	MIPR	Various	C	0	450	2Q FY01	0	NONE			0	450	0
SW SB - Development of NBC Reachback Capability and a Theater Level NBC Fusion C4ISR System	SS/CPFF	Polexis, San Diego, CA	C	0	160	2Q FY01	0	NONE			0	160	0
SW SB - Development of NBC Reachback Capability and a Theater Level NBC Data Fusion C4ISR System	SS/CPFF	PRC, Philadelphia, PA	C	0	100	2Q FY01	0	NONE			0	100	0

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BA4 - Demonstration and Validation**

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I. Product Development- Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
RESTOPS													
HW S - Procure RESTOPS Technologies	MIPR	Air Force - Kirtland AFB, NM	U	0	6281	Oct-01	9500	Oct-02			0	15781	0
Subtotal I. Product Development:				4250	7256		9500				0	21006	

Remarks: JMANS - SW SB - various software development for NBC Reachback and Theater Level NBC Data Fusion C4ISR System include SAIC, McLean, VA, SBCCOM, APG, MD and CBIAC, Edgewood, MD

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II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ARTEMIS													
ES S - AoA - Report	C/CPFF	Battelle, Arlington, VA	N	0	1530	1Q FY01	0	NONE			0	1530	0
ES S - IPT - AoA Oversight	MIPR	Brooks AFB, SBCCOM MCSC	U	0	210	1Q FY01	0	NONE			0	210	0
ES S - IPT - Joint System Engineering	MIPR	HSW/YACN Brooks AFB, San Antonio, TX	U	0	100	3Q FY01	0	NONE			0	100	0
ES S - IPT - Joint System Engineering	MIPR	SBCCOM, APG, MD	U	0	100	3Q FY01	0	NONE			0	100	0
ES S - IPT - Joint System Engineering	MIPR	MCSC, Quantico, VA	U	0	100	3Q FY01	0	NONE			0	100	0
JBREWS													
ES S - Conduct Systems Engineering	MIPR	Johns Hopkins University, Columbia, MD	N	500	0	NONE	0	NONE			0	500	0
ES S - Assist in CONOPS Development	MIPR	Johns Hopkins University, Columbia, MD	N	755	0	NONE	0	NONE			0	755	0
JMANS													
TD/D SB - JMANS CONOPS Development	SS/CPFF	SOBRAN, Edgewood, MD	C	0	100	2Q FY01	0	NONE			0	100	0
ES S - JMANS CONOPS Development	MIPR	CENTCOM, Tampa, FL	U	0	100	2Q FY01	0	NONE			0	100	0

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(DEMLVAL)**

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II. Support Costs - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
RESTOPS													
ILS S - Training for Limited Utility Assessment, Preliminary and Final Demonstrations	MIPR	Air Force - Kirtland AFB, NM	U	0	0	NONE	500	Oct-02			0	500	0
ILS S - Residual Support	MIPR	Air Force - Kirtland AFB, NM	U	0	0	NONE	0	NONE			0	0	0
ES S - Systems Integration and Integration Testing	MIPR	Army - SBCCOM, Edgewood, MD	U	0	0	NONE	1667	Oct-02			0	1667	0
TD/D S - Military Utility Assessment Report and CONOPS Documents	MIPR	Air Force - Kirtland AFB, NM	U	0	0	NONE	0	NONE			0	0	0
Subtotal II. Support Costs:				1255	2240		2167				0	5662	

Remarks:

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JMANS													
OTHT SB - Field Trials For The Radar Multimission Sensor	MIPR	Various	U	0	325	2Q FY01	0	NONE			0	325	0
OTHT SB - Field Trials for the Radar Multimission Sensor	SS/CPFF	Northrop Grumman Corp, Rolling Meadows, IL	C	0	150	2Q FY01	0	NONE			0	150	0
OTHT SB - Field Trials for the Radar Multimission Sensor	SS/CPFF	TAMSCO, Edgewood, MD	C	0	80	2Q FY01	0	NONE			0	80	0
RESTOPS													
OTHT SB - Complete Tests on Selected Technologies in Joint Chemical Field Trials	MIPR	Army - Dugway Proving Ground, UT	U	0	300	Oct-01	0	NONE			0	300	0
OTHT S - Conduct Operational and Functional Tests During Limited Utility Tests	MIPR	Army - Dugway Proving Ground, UT	U	0	2243	Oct-01	339	Oct-02			0	2582	0
OTHT S - Conduct Baselining Exercise on Airbase Operations	MIPR	Air Force - Pacific Command, US Forces Korea	U	0	1900	Oct-01	0	NONE			0	1900	0
OTHT SB - Conduct Airbase Chemical Biological Defense Concepts of Operation Validation	MIPR	Air Force - Air Force Civil Engineering Spt Act, Tyndal AFB, FL	U	0	550	Oct-01	250	Oct-02			0	800	0

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(DEMVAL)**

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III. Test and Evaluation - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
OTHT SB - Conduct Preliminary and Final Demonstrations at Osan AB, Korea	MIPR	Air Force - Osan AB, Korea	U	0	0	NONE	590	Oct-02			0	590	0
Subtotal III. Test and Evaluation:				0	5548		1179				0	6727	

Remarks:

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IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ARTEMIS													
PM/MS S - Program Office - Planning and Programming	WR	NSWCDD, Dahlgren, VA	U	0	565	1Q FY01	0	NONE			0	565	0
PM/MS S - Program Office - Program Support	C/CPFF	Battelle, Arlington, VA	N	0	280	1Q FY01	0	NONE			0	280	0
INTCBATD													
PM/MS S - Produce ACTD Program Documentation, Standup Management Structure, Develop Schedule	Various	DTRA, Ft. Belvoir, VA	U	0	0	NONE	0	NONE			0	0	0
JBREWS													
PM/MS S - Program Management/Program Manager Support	SS/CPFF	Camber Corporation, Falls Church, VA	C	1077	1186	NONE	0	NONE			0	2263	0
JMANS													
PM/MS S - JMANS Multiservice Program Administration	PO	SBCCOM, APG, MD	U	0	230	NONE	0	NONE			0	230	0
RESTOPS													
PM/MS S - Perform Program Management for RESTOPS ACTD	C/CPIF	DTRA Contract - Alexandria, VA	C	0	2198	Oct-01	2500	Oct-02			0	4698	0

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IV. Management Services - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	336	Oct-00	0	NONE			0	336	336
Subtotal IV. Management Services:				1077	4795		2500				0	8372	

Remarks:

TOTAL PROJECT COST:

6582

19839

15346

0

41767

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(DEMVAl)**PROJECT
DE4

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
DE4	DECONTAMINATION SYSTEMS (DEMVAl)	5464	3469	6182						

A. Mission Description and Budget Item Justification:

Project DE4 DECONTAMINATION SYSTEMS (DEMVAl): This project funds Program Definition and Risk Reduction (PDRR) of decontamination systems utilizing solutions that will remove and/or detoxify contaminated material without damaging combat equipment, personnel, or the environment. Decontamination systems provide a force restoration capability for units that become contaminated. Development efforts will provide systems with reduced operational impact, reduced logistics burden, reduced cost, increased safety, and minimized environmental effect over currently fielded decontaminants. Funding supports the Sorbent Decon System (SORBDECON), the Joint Service Fixed Site Decontamination (JSFXD), and the Joint Service Sensitive Equipment Decontamination (JSSED).

The JSFXD system consists of a family of decontaminants and family of applicators that provide each service with the capability to decontaminate fixed sites to restored mission operations. These items will be used to decontaminate equipment, personnel and vital areas to sustain critical cargo flow and operation tempo at ports, airfields, logistic nodes and key command and control centers. The program is divided into four blocks. Block I will field decontaminants that will be used with integral or existing applicators. Block II will field any additional applicators and containment systems required to provide the full fixed site decontamination capability (excluding Block III). Block III will provide a Food and Drug Administration (FDA) approved capability to decontaminate skin/casualties with open wounds. Block IV will address requirements that have been trade-offs or are currently ill defined, inserting technology as it matures to the point of being cost effective.

The JSSED system will fill an immediate need to decontaminate chemical and biological warfare agents from sensitive equipment, vehicle/aircraft interiors, and associated cargo, as defined in the draft Joint Service Operational Requirements Document for the JSSED. The JSSED will be a dual technology development program; one technology to decontaminate sensitive items/equipment and a second technology to decontaminate vehicle/aircraft interiors. The JSSED will utilize a three block approach to address individual key capabilities to reduce program risk and support production schedule. Block I will do sensitive equipment/items decontamination; Block II will do aircraft/vehicle interior decontamination; and, Block III will do aircraft/vehicle interior decontamination "on-the-move."

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(DEMVAL)**

PROJECT

DE4

SORBDECON provides a reactive sorbent powder technology and a family of applicators for immediate decontamination. Sorbent replaces the XE555 resin in the M295 Decontamination Kit for wipe down procedures. The sorbent and a dispenser system will replace M11's and M13's used for immediate decontamination, and associated Decontaminating Solution 2 (DS2) in operator spray down procedures. The Sorbent Decon System will be more reactive towards Chemical Warfare (CW) agents than the M295 Kit using XE555 Resin, therefore reducing the hazard associated with the spent decontaminant. The sorbent will be more compatible with Mission Oriented Protective Posture (MOPP) and other materials than the currently fielded DS2.

FY 2000 Accomplishments:

- 500 JSFXD - Conducted technology definition and assessment of Commercial-off-the-Shelf (COTS)/Non-Developmental Items (NDI) decontamination equipment and decontaminants for Block III.
- 596 JSFXD - Prepared Milestone (MS) documentation for selected candidate equipment for JSFXD program Blocks I-III.
- 1368 JSFXD - Conducted technology definition and assessment on a wide range of development technology to include electrostatic decontamination technologies to neutralize chemical and biological warfare agent threats to personnel, equipment, buildings and agricultural produce; technologies to neutralize drifting chemical and biological aerosols; technologies that are environmentally friendly; and technology methodologies to mitigate chemical and biological contamination resulting from window blast and flying shards of glass.
- 1309 SORBDECON - Developed Milestone (MS) III documentation for operator spray down systems for equipment decontamination. Documentation included the Test and Evaluation Master Plan (TEMP).
- 200 SORBDECON - Developed Technical Data Package (TDP) for operator spray down systems on equipment.
- 800 SORBDECON - Built Engineering Design Test (EDT) hardware for operator spray down systems on equipment.
- 400 SORBDECON - Initiated Integrated Logistic Support (ILS) program for operator spray down systems.
- 291 SORBDECON - Conducted producibility studies for operator spray down systems.

Total 5464

Project DE4

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BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

DE4**FY 2001 Planned Program:**

- 568 JSFXD - Complete performance specifications to support procurement for all blocks and technical documentation (Test Reports and Test Plans) to support a MS B decision for Block I.
- 336 JSFXD - Initiate MS B documentation for Block II. Prepare solicitation package Block III.
- 1000 JSFXD - Procure skin decontaminant candidates and initiate preliminary toxicology testing, and other evaluations to support FDA approval to support down select of Block III skin/casualty decontaminants.
- 420 JSSED - Complete performance specifications and Request for Proposal to support development contract for Block I.
- 398 JSSED - Conduct source selection evaluation board to select Block I candidate systems.
- 232 JSSED - Prepare and submit Block I Milestone A documentation. Documents include Test and Evaluation Master Plan, System Acquisition Master Plan, and Acquisition Program Baseline.
- 256 SORBDECON - Continue development and support of Milestone III decision documentation for operator's spray down system on equipment.
- 200 SORBDECON - Complete baseline toxicity testing of sorbent material.
- 59 SBIR

Total 3469**FY 2002 Planned Program:**

- 577 JSFXD - Continue toxicology testing and other evaluations necessary for FDA approval to support down select of Block III skin/casualty decontaminants.

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BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

DE4**FY 2002 Planned Program (Cont):**

- 1500 JSFXD - Award PDRR contract(s) for Block II family of applicators system to develop prototype applicator and containment systems for evaluation (15 systems at average cost of \$100K).
- 941 JSFXD - Perform Early Operational Assessment and initiate Developmental Testing (DT) of Block II family of applicator systems.
- 2500 JSSED - Award Block I Competitive Prototype contract.
- 664 JSSED - Evaluate Block I prototypes during competitive "shoot-off" to determine decontamination efficacy.

Total 6182

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
DE4**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
DE5 DECONTAMINATION SYSTEMS (EMD)	0	2580	2514							
G47001 MODULAR DECON SYSTEM	7520	2429	5032							
JN0010 JOINT SERVICE FIXED SITE DECON (JSFXD)	0	0	1526							
JN0016 JOINT SERVICE SENSITIVE EQUIPMENT DECON	0	0	0							
JN0018 SORBENT DECON	0	2740	8638							

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PROJECT

DE4**C. Acquisition Strategy:**

JSFXD

Block I: competitively procure COTS/NDI decontaminants and where required, integral applicators for government/contractor test with options for production. Block II: competitive contract to develop applicator and containment systems for government/contractor testing with options for production. Block III: competitive procurement of COTS/NDI decontaminants with potential to meet FDA requirements for government testing with options for production. Block IV provides the warfighter with capabilities that were traded off during Blocks I-III, or to meet those requirements that are currently ill defined or underdefined, by inserting technology as it matures to the point of being cost effective.

JSSED

Utilize a three block approach to address individual key capabilities to reduce program risk and support production schedule. Block I will do sensitive equipment/items decontamination; Block II will do aircraft/vehicle interior decontamination; and Block III will do aircraft/vehicle interior decontamination "on-the-move." Blocks I-III: in-house/contractor development and testing. Competitive contractor manufacture of production units.

SORBDECON

In-house/contractor development and testing. Competitive contractor manufacture of production units.

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(DEMVAL)**

PROJECT
DE4

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSFXD												
Block I - IV IPR					1Q	2Q						
Block I Milestone B							3Q					
Block I Developmental Test (DT)/Operational Test (OT)							3Q		1Q			
Block II Prototype Testing								4Q		3Q		
Block II Milestone B												4Q
Block III Tests for Down Select							3Q			3Q		
Block III Milestone C												4Q
JSSD												
Block I Request for Proposal (RFP) for Competitive Prototype			2Q									
Block I Milestone A						2Q						
Block I Competitive Prototype Contract									1Q			

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PROJECT
DE4

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSSSED (Cont)												
Evaluate Candidate Block I Prototypes										2Q		4Q
SORBDECON												
Engineering, Design, and Test (EDT)/Operational Test (OT)	1Q											
Milestone III for XM100 SORBDECON							3Q					
XM100 SORBDECON Production Contract							3Q					

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PROJECT

DE4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
HW S - Procure Prototype Skin Decontaminants	C/CPFF	TBS	C	0	20	Apr-01	0	NONE			0	20	0
JSSSED													
HW S - JSSSED - Block I Prototype Systems (2)	Various	TBD	C	0	0	NONE	2000	Dec-01			0	2000	0
Subtotal I. Product Development:				0	20		2000				0	2020	

Remarks:

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
ES S - Award Block II PDRR Support Contract	C/CPFF	TBS	C	0	0	NONE	1100	Nov-01			0	1100	0
Subtotal II. Support Costs:				0	0		1100				0	1100	

Remarks:

Project DE4

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**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
DE4

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
OTHT SB - Early Operational Assessment for Block II	MIPR	SBCCOM, Edgewood, MD	U	0	0	Nov-00	100	NONE			0	100	0
OTHT SB - FDA Evaluation of Skin Decontaminants	MIPR	MCSC, Quantico, VA	U	0	985	NONE	577	Nov-01			0	1562	0
OTHT SB - DT for Family of Applicators Systems Block II	PO	MCSC, Quantico, VA		0	0	NONE	800	Nov-01			0	800	0
JSSD													
PM/MS S - Develop and Support Milestone (MS) III Documentation for Operator Spray Down Systems	Various	TBD	U	0	0	NONE	664	Mar-02			0	664	0
OTHT S - JSSD - Block II Competitive Prototype Testing	Various	TBD	U	0	0	NONE	0	NONE			0	0	0
SORBDECON													
OTHT SB - Conduct Toxicity Testing of Sorbent Material	PO	SBCCOM, APG, MD	U	0	200	1Q FY01	0	NONE			0	200	150
Subtotal III. Test and Evaluation:				0	1185		2141				0	3326	

Remarks:

Project DE4

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PROJECT

DE4

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
PM/MS C - Joint IPT Support	MIPR	Various	U	0	899	Nov-00	441	NONE			0	1340	0
JSSD													
PM/MS S - JSSD - Service IPT Support	MIPR	Army, Navy, Air Force, Marine Corps as required		0	1050	1Q FY01	500	1Q FY02			0	1550	0
SORBDECON													
PM/MS S - Develop and Support Milestone (MS) III Documentation for Operator Spray Down Systems	PO	SBCCOM, APG, MD	U	1734	256	1Q FY01	0	NONE			0	1990	1834
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	59	Oct-00	0	NONE			0	59	59
Subtotal IV. Management Services:				1734	2264		941				0	4939	

Remarks: SORBDECON - Milestone III includes integration of the sorbent powder into an applicator; a market survey; testing of commercial applicators; and area coverage testing.

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PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
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DE4

TOTAL PROJECT COST:

1734

3469

6182

0

11385

Project DE4

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAl)** PROJECT
IP4

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
IP4 INDIVIDUAL PROTECTION (DEMVAl)	6400	17113	9855							

A. Mission Description and Budget Item Justification:**Project IP4 INDIVIDUAL PROTECTION (DEMVAl):**

This project funds Program Definition and Risk Reduction (PDRR) of individual protection equipment aimed at improving current protection levels while reducing physiological and logistical burdens. The goal is to provide equipment that allows the individual soldier, sailor, airman, or marine to operate in a contaminated chemical and biological (CB) environment with no or minimal degradation to his/her performance. This project includes the Joint Service General Purpose Mask (JSGPM) and the Joint Service Aircrew Mask (JSAM). The JSGPM will reduce weight, bulk, and breathing resistance by as much as 50 percent. The JSGPM will also improve vision coupling, communication effectiveness, and comfort/wearability. The mask will significantly reduce total ownership cost/life cycle cost. The JSGPM will be low maintenance and priced to be classified as disposable/replaceable after decontamination. JSAM will provide rotary and fixed wing aircrew members with above-the-shoulder CB protection and simultaneous acceleration protection in high performance aircraft. JSAM will integrate with existing aircrew life support systems equipment and support equipment. Follow-on development for demonstration and validation is funded under IP4 in FY01 with transition to engineering manufacturing development funded under IP5 in FY02.

FY 2000 Accomplishments:

- 4700 JSGPM - Awarded Program Definition and Risk Reduction contract for mask design and 250 prototypes (\$1500 each). Prototypes will be delivered in 3QFY01. Contractor initiated design of mask to Joint Service performance specifications with Joint Service input.

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PROJECT

IP4

FY 2000 Accomplishments (Cont):

- 750 JSGPM - Continued preparation of program/project documentation to achieve Milestone II. Documentation included the Acquisition Strategy (AS), Test and Evaluation Master Plan (TEMP), and the Manpower and Personnel Integration (MANPRINT) Plan.
- 625 JSGPM - Prepared for Engineering Design Test (EDT), which included staffing of Test and Evaluation Master Plan (TEMP), and coordinating with the testing community.
- 325 JSGPM - Conducted sustainment study to investigate prime vendor/direct vendor delivery/contractor logistics support.

Total 6400

FY 2001 Planned Program:

- 4827 JSAM - Continue prototype development and contractor development test. Contractors will deliver 25 prototypes of each variant. Number of variants and cost per variant prototype is competition sensitive information.
- 2257 JSAM - Continue contractor risk reduction/system engineering/Cost As an Independent Variable analysis studies/program management activities.
- 778 JSAM - Continue government test working group activities. The government test team is conducting 13 Test Planning Working Group meetings to finalize plans and procedures for PDRR prototype testing.
- 1201 JSGPM - Complete preparation for MS II, activities include finalization of the Acquisition Strategy (AS), Test and Evaluation Master Plan (TEMP), and the Manpower and Personnel Integration (MANPRINT) Plan.
- 6252 JSGPM - Continue Program Definition and Risk Reduction contract for mask design and 250 prototypes (\$1500 each). Prototypes will be delivered in 3QFY01. Contractor initiated design of mask to Joint Service performance specifications with Joint Service input.

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**RDT&E DEFENSE-WIDE/
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PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

IP4**FY 2001 Planned Program (Cont):**

- 1142 JSGPM - Conduct Engineering Design Test (EDT). Testing ensures meeting Joint Service requirements for protection, communication, drinking, breathing resistance, and weight/bulk limitations.
- 367 JSGPM - Continue sustainment study for logistics support.
- 289 SBIR

Total 17113**FY 2002 Planned Program:**

- 2890 JSAM - Finalize PDRR test plans/procedures and evaluate PDRR prototypes. The Government will evaluate the prototypes for chemical agent permeation, fit factor, positive pressure breathing for altitude, anti-G endurance (centrifuge), air crew life support equipment integration and aircraft interface checks, human factors and environmental factors.
- 4564 JSAM - Complete initial development and qualification testing of prototypes. Deliver prototypes to the government for PDRR testing.
- 2401 JSAM - Continue system engineering. Support government PDRR prototype testing and prepare for/conduct MS II and transition to engineering manufacturing development.

Total 9855

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
IP4**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
IP5 INDIVIDUAL PROTECTION (EMD)	10328	7379	20850							
JA0002 JT SVC AVIATION MASK (JSAM)	0	0	0							
JA0003 JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)	0	0	0							
JN0011 AERP AIRCRAFT MODS	0	2745	2962							
JN0013 NAVY INDIVIDUAL PROTECTIVE GEAR	3369	5406	2328							
M95801 PROTECTION ASSESSMENT TEST SYSTEM (PATS) M41	7254	0	0							
M99501 MASK, AIRCRAFT M45	3832	1000	457							
M99601 MASK, CHEM -BIOLOGICAL PROTECTIVE FIELD:M40/M40A1	13412	1492	143							
MA0400 PROTECTIVE CLOTHING	87192	100579	99220							
MA0480 SECOND SKIN, MASK MCU-2/P	0	918	3471							

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(DEMVAL)**

PROJECT

IP4**C. Acquisition Strategy:**

JSGPM

The Acquisition Strategy outlines the strategy for a combined full scale development (Program Definition and Risk Reduction and Engineering and Manufacturing Development) and production. The production/development contract is based on a Joint Service performance specification with special emphasis on reducing weight, bulk, and breathing resistance by as much as 50 percent, and lowest achievable total ownership cost.

JSAM

Acquisition strategy is to award dual contracts for the Program Definition and Risk Reduction (PDRR) with a full and open downselect to one contractor for Engineering and Manufacturing Development (EMD) with production options. Implementation of Cost As An Independent Variable (CAIV) is crucial to the PDRR phase with special emphasis on reducing Life Cycle Cost and meeting an average unit price.

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**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
IP4

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSAM												
Milestone I		2Q										
Fabricate Prototypes					2Q			4Q				
Initial Development and Qualification Testing (Contractor)								4Q		2Q		
Program Definition and Risk Reduction (PDRR) Government Test									2Q		3Q	
Milestone II												4Q
JSGPM												
Development Contract Award	1Q											
First Prototype					2Q							
Engineering, Design, and Test (EDT)					2Q		3Q					
Milestone II In Process Review (IPR)								4Q				

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

IP4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSAM													
HW S - JSAM Initial Development	C/CPFF	SAIC and GENTEX	C	0	5839	Jan-01	5884	Nov-01			0	11723	0
JSGPM													
HW S - PDRR Contract for Mask Design and 250 Prototypes	C/CPIF	Avon Inc., Cadillac, MI	C	3800	5473	Feb-01	0	NONE			0	9273	9300
Subtotal I. Product Development:				3800	11312		5884				0	20996	

Remarks:

JSGPM - FY00- Award Program Definition Risk Reduction (PDRR) contract and conduct PDRR. FY01 continues PDRR. Prototypes cost \$1500 each.

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(DEMVAl)**

PROJECT

IP4

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSGPM													
ILS S - Conduct Sustainment Study for Prime Vendor Delivery and Contractor Logistics Support	PO	PM NBCDS, APG, MD	U	240	400	1Q FY01	0	NONE			0	640	640
TD/D S - Conduct Program/Project Documentation	PO	PM NBCDS, APG, MD	U	600	968	1Q FY01	0	NONE			0	1568	1600
Subtotal II. Support Costs:				840	1368		0				0	2208	

Remarks:

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(DEMVAL)**

PROJECT

IP4

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSAM													
DTE S - Govt Test Activities	Various	NAVAIR (Patuxent River, MD) & AFOTEC (Kirtland AFB, NM)	U	0	778	1Q FY01	2890	1Q FY02			0	3668	0
JSGPM													
OTHT S - Conduct Engineering Design Test (EDT)	Various	DTC, APG, MD; HRED, APG, MD	U	500	1006	1Q FY01	0	NONE			0	1506	0
Subtotal III. Test and Evaluation:				500	1784		2890				0	5174	

Remarks:

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(DEMVAL)**

PROJECT

IP4

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSAM													
PM/MS S - Mission Support	MIPR	Various	U	0	1245	1Q FY01	1081	1Q FY02			0	2326	0
JSGPM													
PM/MS S - Conducted Joint Program/Project Management	PO	PM NBCDS, APG, MD	U	1260	1115	1Q FY01	0	NONE			0	2375	2360
ZSBIR													
SBIR - Aggregated from SBIR	PO	HQ, AMC, Alexandria, VA	U	0	289	Oct-00	0	NONE			0	289	289
Subtotal IV. Management Services:				1260	2649		1081				0	4990	

Remarks:

TOTAL PROJECT COST:	6400	17113		9855				0	33368	
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**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAl)** PROJECT
MB4

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
MB4	MEDICAL BIOLOGICAL DEFENSE (DEMVAl)	17559	29419	34565						

A. Mission Description and Budget Item Justification:

Project MB4 MEDICAL BIOLOGICAL DEFENSE (DEMVAl): This project funds the Program Definition and Risk Reduction (PDRR) phase (acquisition phase I) for vaccines, drugs, and diagnostic medical devices that are directed against validated biological warfare (BW) agents to include bacteria, viruses, and toxins of biological origin. PDRR efforts for medical biological defense product development include establishing standards and reference material for manufacturing and preliminary safety studies in animals. These data (manufacturing process development, pilot lot manufacturing and non-clinical safety/toxicology studies) are submitted in support of an Investigational New Drug (IND) application with the FDA so that human studies to evaluate product safety and immunogenicity can be conducted. PDRR efforts are expected to be accomplished in two to four plus years. At the end of PDRR, the product will transition to the Engineering and Manufacturing Development (EMD) phase. Products to be developed under this program include: Recombinant Botulinum, Next Generation Anthrax, Plague, Smallpox, Tularemia, and Multivalent Equine Encephalitis vaccines.

FY 2000 Accomplishments:

- 7820 JVAP - Tularemia Vaccine - Conducted manufacturing process refinement for Tularemia vaccine including product characterization and assay development.
- 7815 JVAP - Recombinant Botulinum Vaccine - Conducted manufacturing process development and purification process refinement for Botulinum serotypes A and B vaccines.
- 154 JVAP - Multivalent Equine Encephalitis Vaccines - Qualified facility and initiated manufacture of cGMP (current Good Manufacturing Practices) pilot lot for Venezuelan Equine Encephalitis (VEE) IA vaccine.

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PROJECT

MB4**FY 2000 Accomplishments (Cont):**

- 1211 JVAP - Smallpox Vaccine - Continued Phase 2a clinical trial and feasibility study for Smallpox vaccine for transition to consistency lot scale up and large scale safety trials. Conducted master cell and seed bank characterization. Manufactured Vaccinia Immune Globulin (VIG) consistency lots and initiated pivotal clinical trial.
- 559 JVAP - Plague Vaccine - Began component advanced development for a manufacturing process for combined F1+V Plague vaccine candidate.

Total 17559**FY 2001 Planned Program:**

- 7601 JVAP - Tularemia Vaccine - Continue process refinement for Tularemia vaccine including formulation studies. Conduct development and validation of assay for immune correlate. Begin efficacy testing in animals.
- 9600 JVAP - Recombinant Botulinum Vaccine - Continue manufacturing process development and purification refinement Botulinum vaccines. Prepare master and working seed banks. Manufacture cGMP pilot lot of one serotype.
- 2807 JVAP - Multivalent Equine Encephalitis Vaccine - Complete pilot lot manufacture. Conduct stability and formulation studies and perform assay development and validation for VEE 1A vaccine.
- 1918 JVAP - Smallpox Vaccine - Complete clinical trial for Vaccinia Immune Globulin (VIG) and initiate assay development for Smallpox vaccine for transition to EMD.
- 930 JVAP - Plague Vaccine - Continue component advanced development for a manufacturing process for combined F1+V Plague vaccine candidate.
- 400 JVAP - Next Generation Anthrax Vaccine - Initiate technology transfer and process development for Next Generation Anthrax vaccine.

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MB4**FY 2001 Planned Program (Cont):**

- 5665 JVAP - Vaccine component advanced development - Initiate development of novel antigens (Ricin, Anthrax, Staphylococcal Enterotoxins), adjuvants, preservatives, and delivery systems for biological defense vaccines. This includes formulation and process development studies; preclinical; initial safety and immunogenicity studies; and supports technology transfer from the research laboratories.
- 498 SBIR

Total 29419**FY 2002 Planned Program:**

- 10230 JVAP - Tularemia Vaccine - Continue efficacy testing and begin immunogenicity studies for Tularemia vaccine. Begin pilot lot manufacture and stability testing.
- 12754 JVAP - Recombinant Botulinum Vaccine - Continue manufacturing process refinement of serotypes for the Recombinant Botulinum vaccine including antigen characterization and assay development and validation. Begin pilot production of second serotype and conduct non-clinical testing for multivalent Recombinant Botulinum vaccine.
- 5090 JVAP - Multivalent Equine Encephalitis Vaccine - Complete process development studies for VEE 1A component of the Multivalent Encephalitis vaccine and manufacture cGMP pilot lots for other Multivalent Encephalitis components.
- 5105 JVAP - Plague Vaccine - Continue process development and initiate comparability studies in non-human primates for Plague vaccine. Initiate assay development and validation.
- 1000 JVAP - Next Generation Anthrax Vaccine - Continue process definition studies for Next Generation Anthrax vaccine including stability and formulation studies.

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BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MB4**FY 2002 Planned Program (Cont):**

- 386 JVAP - Vaccine component advanced development - Continue development of novel antigens (Ricin, Anthrax, Staphylococcal Enterotoxins), adjuvants, preservatives, and delivery systems for biological defense vaccines. This includes formulation and process development studies; preclinical; initial safety and immunogenicity studies; and supports technology transfer from the research laboratories.

Total 34565**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
JX0005 DOD BIOLOGICAL VACCINE PROCUREMENT	66430	52876	56074							
MB5 MEDICAL BIOLOGICAL DEFENSE (EMD)	14945	21277	48818							

C. Acquisition Strategy: USD(A&T) ADM (dated 2 May 1995) for the Biological Defense program directs that "The Army shall use the prime contract approach in procuring the required vaccines."

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
MB4

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
VACCINES												
Smallpox - Phase I Program Definition and Risk Reduction (PDRR)	>>							2Q				
Tularemia - Phase I Program Definition and Risk Reduction (PDRR)	1Q											4Q
Venezuelan Equine Encephalitis - Phase I	>>							4Q				
Plague - Phase I Program Definition and Risk Reduction (PDRR)					1Q							4Q
Next Generation Anthrax - Phase I Program Definition and Risk Reduction (PDRR)					1Q							4Q

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
MB4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
VACCINES													
SW SB - Vaccine Development - Includes Consistency Lot, Pilot Lot, and Scale-up Production	C/CPAF	DynPort Vaccine Corporation, Frederick, MD	C	5536	9303	Nov-00	11390	Nov-01			0	26229	0
Subtotal I. Product Development:				5536	9303		11390				0	26229	

Remarks: Cost to Complete: "Continuing"

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MB4

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
VACCINES													
TD/D SB - Vaccine Development - Includes Process Definition, Environmental and FDA Documentation	C/CPAF	DynPort Vaccine Company, Frederick, MD	C	2689	4551	Nov-00	5532	Nov-01			0	12772	0
Subtotal II. Support Costs:				2689	4551		5532				0	12772	

Remarks: Cost to Complete: "Continuing"

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RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation

PE NUMBER AND TITLE

0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)

PROJECT

MB4

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
VACCINES													
DTE S - Vaccine Development - Includes Phase I/II Clinical and Non-clinical Trials, Tox Studies, Surrogate and Assay Testing	C/CPAF	DynPort Vaccine Company, Frederick, MD	C	6836	10977	Nov-00	13343	Nov-01			0	31156	0
OTHT SB - Vaccine Development - Includes Stability and Efficacy Testing	C/CPAF	DynPort Vaccine Company, Frederick, MD	C	1107	1874	Nov-00	2278	Nov-01			0	5259	0
Subtotal III. Test and Evaluation:				7943	12851		15621				0	36415	

Remarks: Cost to Complete: "Continuing"

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MB4

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
VACCINES													
PM/MS S - Program Management and Program Manager Support	Various	Joint Program Office for Biological Defense, Falls Church, VA	U	1931	2216	Oct-00	2022	Oct-01			0	6169	0
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	498	Oct-00	0	NONE			0	498	498
Subtotal IV. Management Services:				1931	2714		2022				0	6667	

Remarks: Cost to Complete: "Continuing"

TOTAL PROJECT COST:	18099	29419		34565					0	82083	
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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAl)**

PROJECT

MC4

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
MC4	MEDICAL CHEMICAL DEFENSE (DEMVAl)	2636	2141	1887						

A. Mission Description and Budget Item Justification:

Project MC4 MEDICAL CHEMICAL DEFENSE (DEMVAl): This project funds Program Definition and Risk Reduction (PDRR) of countermeasures for chemical agents including life support equipment, diagnostic equipment, pretreatment and therapeutic drugs, and individual/casualty decontamination compounds. A system of medical defense against chemical agents is required to provide protection, to sustain performance in a chemical environment, and to provide for self-aid and medical treatment of chemical casualties. Fielding of pretreatment and therapeutic drugs requires Food and Drug Administration (FDA) approval. Multiple long-term studies are required to obtain FDA approval resulting in longer program timelines and greater program cost than other non-pharmaceutical product programs. Efficacy testing of most candidate drugs against Chemical Warfare (CW) agents cannot be conducted in humans; therefore, animal surrogate models must be developed.

FY 2000 Accomplishments:

- 86 Cyanide Pretreatment - Conducted safety review, and returned program to the tech base. Methemoglobin Monitor transition to advanced development was delayed pending successful transition of the Cyanide Pretreatment.
- 156 Multichambered Autoinjector - Conducted Initial Operational Test and Evaluation (IOT&E).
- 412 Pyridostigmine Bromide - Initiated 2-year clinical bioequivalence study.
- 440 Pyridostigmine Bromide - Initiated four 2-year studies to validate surrogate markers for human efficacy. (Human ex vivo muscle study, human ex vivo blood study, nonhuman primate ex vivo study, and small animal ex vivo muscle study)
- 49 Advanced Anticonvulsant - Conducted Milestone I in-process review.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MC4**FY 2000 Accomplishments (Cont):**

- 369 Skin Exposure Reduction Paste Against Chemical Warfare Agent (SERPACWA, formerly Topical Skin Protectant, TSP) - Produced two lots for validation studies.
- 221 SERPACWA - Conducted durability study.
- 903 SERPACWA - Conducted stability testing.

Total 2636**FY 2001 Planned Program:**

- 151 Pyridostigmine Bromide - Complete 2-year clinical bioequivalence study.
- 437 Advanced Anticonvulsant - Produce current Good Manufacturing Practice (cGMP) pilot lots for preclinical studies.
- 870 Advanced Anticonvulsant - Initiate a 2-year preclinical efficacy study in nonhuman primates.
- 647 Advanced Anticonvulsant - Initiate multi-year toxicology studies.
- 36 SBIR

Total 2141**FY 2002 Planned Program:**

- 866 Advanced Anticonvulsant - Complete multi-year toxicology studies.
- 733 Advanced Anticonvulsant - Complete 2-year preclinical efficacy study in nonhuman primates.
- 288 Advanced Anticonvulsant - Formulate advanced anticonvulsant in autoinjector for planned clinical studies.

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT
MC4

FY 2002 Planned Program (Cont):
Total 1887

B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
MC5 MEDICAL CHEMICAL DEFENSE (EMD)	724	1081	1472							

C. Acquisition Strategy:

Multi Autoinjector	In-house/contractor development to FDA licensure, followed by single source procurement.
Pyrido Bromide	In-house development to FDA licensure, followed by single source procurement.
Adv Anticonvuls	In-house development to FDA licensure, followed by single source procurement.
SERPACWA	In-house development to FDA licensure, followed by single source procurement.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation

PE NUMBER AND TITLE

0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)

PROJECT

MC4

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
MEDCHEM												
Advanced Anticonvulsant - Milestone I				4Q								
Advanced Anticonvulsant - Milestone II											3Q	
Multichambered Autoinjector - Initial Operational Test and Evaluation (IOT&E)		2Q										
SERPACWA - Upgrade Manufacturing				4Q								
SERPACWA - Durability Study	1Q											
SERPACWA - Stability Study	1Q											
Pyridostigmine Bromide - Bioequivalence			3Q									
Pyridostigmine Bromide - Validate Surrogate Markers	1Q											

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MC4

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
MEDCHEM													
HW S - Milestone I IPR for Advanced Anticonvulsant	C/CPFF	Cambridge Consulting Corp, Reston, VA	C	49	0	NONE	0	NONE			0	49	49
HW C - Produce Lots of SERPACWA for Validation Studies	C/FP	McKesson BioServices, Rockville, MD	C	369	0	NONE	0	NONE			0	369	300
SW SB - Produce Pilot Lots of Advanced Anticonvulsant	C/CPFF	TBD	C	0	439	1Q FY01	0	NONE			0	439	0
HW S - Formulate Advanced Anticonvulsant in Autoinjector	C/CPFF	TBD	C	0	0	NONE	288	1Q FY02			0	288	0
HW S - FDA Documentation for Advanced Anticonvulsant	Allot	USAMMDA, Ft Detrick, MD	U	0	0	NONE	0	NONE			0	0	0
HW S - Milestone II IPR for Advanced Anticonvulsant	C/CPFF	Cambridge Consulting Corp, Reston, VA	C	0	0	NONE	0	NONE			0	0	0
SW SB - Formulate Nerve Agent Scavenger for Pre-clinical Study	PO	TBD	C	0	0	NONE	0	NONE			0	0	0
HW S - Milestone I IPR for Active TSP	PO	Cambridge Consulting Corp, Reston, VA		0	0	NONE	0	NONE			0	0	0
HW S - Milestone I IPR for Nerve Agent Scavenger	PO	Cambridge Consulting Corp, Reston, VA		0	0	NONE	0	NONE			0	0	0
Subtotal I. Product Development:				418	439		288				0	1145	

Project MC4

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MC4

I. Product Development- Cont

Remarks:

II. Support Costs: Not applicable

Project MC4

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**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**PE NUMBER AND TITLE
**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**PROJECT
MC4

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
MEDCHEM													
DTE C - Safety Review of Cyanide Pretreatment	Allot	Walter Reed Army Institute of Research, Silver Spring, MD	U	86	0	NONE	0	NONE			0	86	70
OTE S - IOT&E for Multichambered Autoinjector	Allot	Army Medical Department Center and School, Ft Sam Houston, TX	U	156	0	NONE	0	NONE			0	156	150
DTE S - Bioequivalence Studies of Pyridostigmine Bromide	PO	TBD	C	412	149	1Q FY01	0	NONE			0	561	370
DTE S - Pyridostigmine Bromide - Validate Surrogate Markers	Allot	USA Medical Research Institute of Chemical Defense, APG, MD	U	440	0	NONE	0	NONE			0	440	358
DTE C - Durability Study for SERPACWA	Allot	USA Medical Research Inst of Environmental Medicine, Natick, MA	U	221	0	NONE	0	NONE			0	221	150
DTE C - Stability Test of SERPACWA	SS/FP	McKesson Bio Services, Rockville, MD	C	903	0	NONE	0	NONE			0	903	733
DTE S - Preclinical Efficacy Study of Advanced Anticonvulsant	Allot	USA Medical Research Institute of Chemical Defense, APG, MD	U	0	870	1Q FY01	733	1Q FY02			0	1603	0
DTE S - Toxicology Studies of Advanced Anticonvulsant	C/CPFF	TBD	C	0	647	1Q FY01	866	1Q FY02			0	1513	0

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA4 - Demonstration and Validation**

PE NUMBER AND TITLE

**0603884BP CHEMICAL/BIOLOGICAL DEFENSE
(DEMVAL)**

PROJECT

MC4

III. Test and Evaluation - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
DTE S - Safety Evaluation Study of Active TSP in Animals	PO	TBD	C	0	0	NONE	0	NONE			0	0	0
Subtotal III. Test and Evaluation:				2218	1666		1599				0	5483	

Remarks:

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	36	Oct-00	0	NONE			0	36	36
Subtotal IV. Management Services:				0	36		0				0	36	

Remarks:

TOTAL PROJECT COST:	2636	2141		1887				0	6664	
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Project MC4

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Program Element (PE) Cost	112908	102707	159943							
BJ5 BIOLOGICAL DEFENSE (EMD)	13575	5950	18178							
CA5 CONTAMINATION AVOIDANCE (EMD)	61717	61208	64099							
CO5 COLLECTIVE PROTECTION (EMD)	4835	3232	4012							
CP5 COUNTERPROLIFERATION SUPPORT (EMD)	6784	0	0							
DE5 DECONTAMINATION SYSTEMS (EMD)	0	2580	2514							
IP5 INDIVIDUAL PROTECTION (EMD)	10328	7379	20850							
MB5 MEDICAL BIOLOGICAL DEFENSE (EMD)	14945	21277	48818							
MC5 MEDICAL CHEMICAL DEFENSE (EMD)	724	1081	1472							

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/

BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

A. Mission Description and Budget Item Justification: Operational forces have an immediate need to survive, safely operate, and sustain operations in a chemical and biological agent threat environment across the continuum of global, contingency, special operations/low-intensity conflict, counternarcotics, and other high risk missions. Operating forces have a critical need for defense against worldwide proliferation of Chemical and Biological (CB) warfare capabilities and for medical treatment of casualties in medical treatment facilities. Congress has directed centralized management of Department of Defense (DoD) CB Defense initiatives, both medical and non-medical. This program element supports the Engineering and Manufacturing Development (EMD) of CB defensive equipment, both medical and non-medical, and addresses various shortcomings identified in CONDUCT OF THE PERSIAN GULF WAR: FINAL REPORT TO CONGRESS, April 1992. These projects have been restructured to consolidate Joint and Service-unique tasks within specific commodity areas: contamination avoidance, force protection (individual and collective), decontamination and medical countermeasures. The consolidation will provide for development and operational testing of equipment for Joint Service as well as Service-unique requirements.

Contamination avoidance efforts under this engineering and manufacturing development program will provide U.S. forces with real-time hazard assessment capabilities. They include advanced multi-agent point and remote chemical detection systems for ground, aircraft, and shipboard applications; automated warning and reporting systems; integrated radiation detection and monitoring equipment; and enhanced battlefield reconnaissance capabilities. Force protection (individual and collective) efforts will increase protection levels while decreasing physical and psychological burdens imposed by protective equipment. They include improved aircrew respiratory protection, lightweight integrated suit technology, and shipboard collective protection equipment.

Decontamination systems provide a force restoration capability for units that become contaminated. Decontamination systems are being engineered, manufactured, and developed to provide decontamination units with the capability to tailor their equipment to specific missions. In the event contamination cannot be avoided, personnel and equipment must be decontaminated in order to reduce and/or eliminate hazards after chemical and biological agent employment in order to restore and maintain operational tempo.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

The medical chemical defense engineering and manufacturing development program funds improved medical equipment and drugs essential to counteracting lethal and performance-degrading effects of chemical threats, and medical equipment essential to meeting medical requirements on the integrated battlefield with emphasis on decreased size/weight and high mobility, yet supporting large numbers of combat casualties. Additionally, foreign medical materiel may be procured for exploitation of advanced technology and development to meet medical defense goals. This program element supports the full-scale development of prophylactic and therapeutic drugs and rapid identification and diagnostic systems.

DoD Biological Defense mission requires the detection and identification of validated biological threat agents to provide early warning capabilities on mobile and fixed platforms. This program element will provide theater protection through the development of point and stand-off detection systems. The detection system concept will provide detection, identification, warning and sample collection for verification that a biological agent attack has occurred. This program element also provides for the development of biological defense medical programs. DoD Biological Defense medical mission will address: (1) protective vaccines - vaccination capability against the most probable biological threat agents; (2) identification - clinical identification of biological threat agents through medical evaluation and laboratory analysis to augment early warning capabilities.

The projects in this Program Element support research efforts in the engineering and manufacturing development phase of the acquisition process and are therefore correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/

BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	118458	100815	166231	
Appropriated Value	119365	104015	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	-728	0	
b. SBIR/STTR	-1717	0	0	
c. Omnibus or Other Above Threshold Reductions	-1478	0	0	
d. Below Threshold Reprogramming	-2849	-353	0	
e. Rescissions	-413	-227	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	-6288	
FY2002/2003 President's Budget	112908	102707	159943	

Change Summary Explanation:**Funding:**

FY02 - In project BJ5, JBPDS (\$1,600K) for increased EMD effort; JBPDS Blk II (-\$5,584K) to properly phase program with JBPDS; JBREWS (-\$24,676K) program redefined based on technology and user requirements and integrated into the JBSDS program. In project CA5, JCAD (\$14,997K) for increased EMD effort; JSLNBCRS (\$13,000K) for increased EMD effort to include TICs and TIMs detection in sub components, JWARN (\$10,000K) for increased efforts to insure integration into service command control systems. In project CO5, CBPS (\$800K) for increased EMD effort for the P3I systems for Airborne and Heavy units. In project DE5, JSFXD (-\$975K) moved to project DE4 efforts; SORBDECON (-\$3,804K) moved to procurement. In project IP5, JPACE (\$2,137K) for increased EMD effort; JSAM (-\$5,414K) moved to IP4; JSGPM (\$2,500K) for increase EMD effort; PROT CLTH (\$1,500K) for increased EMD effort. In project MB5, JBAIDS (\$10,500K) establishes new start program; VACCINES (-\$21,563K) program realignment. Moved to higher priority programs, BJ5 (-\$2K); CA5 (-\$5K); CO5 (-\$1K); DE5 (-\$1K); IP5 (-\$3K); MB5 (-\$8K). Realigned development funding for JTCOPS from BA5 to BA4 (-\$4,553K). Increase for inflation

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)**Funding (cont.)**

assumptions (\$867K). Increased funding to establish a program office associated with a vaccine production facility (\$2,400K).

Schedule:**Technical:**

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
BJ5 BIOLOGICAL DEFENSE (EMD)	13575	5950	18178							

A. Mission Description and Budget Item Justification:

Project BJ5 BIOLOGICAL DEFENSE (EMD): The Department of Defense's (DoD) Biological Defense mission requires the detection and identification of biological threat agents to provide early-warning capabilities to mobile forces and high-value fixed-site assets. The detection system concept will provide detection, identification, warning, and sample collection for verification of large area and point source biological agent attacks.

The Joint Biological Point Detection System (JBPDS) program is an evolutionary advancement of the Army Biological Integration Detection system (BIDS), Navy Interim Biological Agent Detection (IBAD) and Air Force and Marine Corps Service-specific development programs. The common detection suite will meet the Joint Service requirements contained in the Joint Operational Requirements Document (JORD). This suite will be integrated onto Service-specific platforms (e.g., High Mobility Multi-purpose Wheeled Vehicle (HMMWV), ship, etc.), employed at fixed sites (e.g., airbase), and may be employed as a portable system for expeditionary and forward operating forces. The JBPDS is a common detection system employed by all services, thus greatly enhancing Joint Service interoperability. The JBPDS is a fully automated system, that increases the number of agents that can be identified by the current BIDS and IBAD systems, and provides first-time point biological detection capability to the Air Force and Marine Corps. An evolutionary component/suite upgrade acquisition approach (Block II program) will be used to take advantage of emerging technologies, and to provide the Services with enhanced bio detection performance at lower life cycle costs.

This project includes the completion of installation of IBAD rapid prototypes aboard Naval ships and their continued operational support. IBAD gives the Navy an interim point detection capability aboard ships at sea, which will be part of the theater protection strategy. The Block I JBPDS will replace the IBAD beginning in FY02.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5**

This project also supports the XM99, Air Base/Port Detector System (ABPDS) also known as the Portal Shield System with Contractor Logistics Support (CLS), spares/repairs of network detection sensors, and an upgrade to the sampling system at four sites in the Central Command/Pacific Command (CENTCOM/PACOM) Area of Responsibility (AOR).

The Critical Reagent Program (CRP) is integrating and consolidating all Department of Defense (DoD) reagents/antibodies/DNA biological detection requirements in demonstration/validation through production. The CRP ensures the availability of high-quality reagents throughout the life-cycle of all Biological Warfare (BW) detection/identification systems. This project supports all aspects of manufacturing "SCALE-UP" of developmental protocols for Critical Reagent Program-developed products, including maintenance of repositories and validation laboratories.

The Joint Biological Standoff Detection System (JBSDS) will be employed to provide detection of biological hazards employed by various means and will provide early warning via the Joint Warning and Reporting System (JWARN). JBSDS will augment and integrate with existing biological detection systems to provide a biological detection network capable of near real time detection and warning theater-wide to limit the effects of biological agent hazards against U.S. forces at the tactical and operational level of war. JBSDS will have the flexibility to warn automatically or to allow for human intervention in the detection-to-alarm process. JBSDS will be employed in support of various areas of interest (e.g. fixed sites, air/sea ports of debarkation, amphibious landing sites, etc.). JBSDS will be capable of operating remotely, in unattended configurations, or on platforms to include vehicles, aircraft, and ships.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT BJ5**FY 2000 Accomplishments:**

- 367 Air Base/Port Biological Detector (Portal Shield) - Initiated upgrades to trigger and sampling components.
- 340 Air Base/Port Biological Detector (Portal Shield) - Provided depot repairs and spares for detector networks in CENTCOM/PACOM Area of Operations (AO).
- 2017 Air Base/Port Biological Detector (Portal Shield) - Provided contractor logistics support of installed Advanced Concept Technology Demonstration (ACTD) detector networks in CENTCOM/PACOM AO.
- 675 CRP - Transitioned three newly-developed reagent protocols to full-scale production. Completed five reagent standardizations across biodetection platforms.
- 538 CRP - Supported reagent repository and reagent validation.
- 328 IBADS - Continued material support of rapid prototype systems and investigation of aerosol background.
- 3933 JBPDS - Completed the fabrication and documentation of 15 JBPDS detection systems used in Engineering Design Test (EDT), and Production Qualification Test/Operational Assessment (PQT/OA), required prior to entry into Low Rate Initial Production (LRIP).
- 1752 JBPDS - Collected, reviewed, and analyzed PQT/OA test information required for entry into LRIP.
- 1557 JBPDS - Developed initial plans for Initial Operational Testing & Evaluation (IOT&E) required prior to a Milestone III.
- 1297 JBPDS - Completed Integrated Logistics Support (ILS) tasks, including operator and organizational technical manual, training support packages, safety analysis, logistics supportability analyses, and provisioning databases to the Line Replaceable Unit (LRU) level, and Reliability, Availability and Maintainability (RAM) analysis.
- 771 JBPDS - Provided test and analytical support to Joint Field Trials (JFT-6) at Defense Research Establishment, Suffield, Canada. This test identified and evaluated candidate technologies for use in JBPDS.

Total 13575

Project BJ5

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Exhibit R-2 (PE 0604384BP)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5****FY 2001 Planned Program:**

- 1105 CRP - Initiate transition of newly developed protocols to full scale production. Begin transition of molecular reagents to production. Maintain reagent repositories and validation processes.
- 324 IBADS - Continue material support of rapid prototype systems.
- 3183 JPBDS - Conduct Operational Assessment II and support Block I IOT&E planning required for a Milestone III decision.
- 1237 JBPDS Block II - Initiate Block II design studies define performance specifications, identify potential design concepts, and reduce risk to the EMD program. Prepare request for proposal for Block II EMD contract.
- 101 SBIR

Total 5950

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5**

FY 2002 Planned Program:

- 1148 CRP - Continue transition of newly developed ITF-6B Protocols. Continue transition of molecular reagents. Maintain reagent repositories and validation processes.
- 336 IBADS - Continue material support of rapid prototype systems.
- 2000 JBPDS Block II - Initiate software development and documentation. Develop advanced algorithms that will enhance the JBPDS Block II ability to discriminate background environment aerosol components, while not sacrificing its sensitivity and responsiveness to biological warfare attacks.
- 1696 JBPDS Block II - Initiate early integrated logistics support to ensure the lowest possible life cycle costs and supportability of the Block II system in the field.
- 7000 JBPDS Block II - Initiate component selection, fabrication, and evaluation to develop and refine the critical components of the Block II that will give system the performance capabilities required in the JORD.
- 4398 JBPDS Block II - Initiate system level hardware development, integration, evaluation, and documentation to ensure that individual components can be successfully integrated into a functioning, coordinated system to meet system automation, and ensure component compatibility.
- 732 JBPDS Block II - Support a joint field trial conducted to identify technologies for the Joint Biological Standoff Detection System (JBSDS) and the Joint Biological Agent Identification Diagnostic System (JBAIDS).
- 868 JBPDS Block II - Support the hardware selection, fabrication, and evaluation efforts necessary to develop and refine the critical components that will ensure the JBPDS Block II system meets the performance capabilities required by the Joint Operational Requirement Document (JORD).

Total 18178

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5**B. Other Program Funding Summary:**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
G47101 JOINT WARNING & REPORTING NETWORK (JWARN)	9639	8483	0							
JP0100 JOINT BIO POINT DETECTION SYSTEM (JBPDS)	18163	28881	38579							
JPO210 CRITICAL REAGENTS PROGRAM (CRP)	2399	2293	1926							
JPO230 PORTAL SHIELD EQUIPMENT	4751	26315	3892							
M93001 BIO INTEGRATED DETECTOR SYSTEM (BIDS)	14593	33319	55445							
MC0100 JT SVC LTWT NBC RECON SYS (JSLNBCRS)	0	0	0							

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5****C. Acquisition Strategy:**

ABPDS	In-house development and fabrication of detection prototypes and use of competitive omnibus contract for fabrication of upgrades.
CRP	Contract development of reagents to detect threat agents and procurement of more effective agents to replace older stocks. Consolidate the R&D effort within DoD for all biological detector/identification requirements. The BJ5 Program transitions these reagent protocols into production following the testing of these reagents in fielded platforms. ITF-6A Priority List completed in FY00. Continue to focus efforts on developing and transitioning reagents against the ITF-6B Priority List in order to meet JBPDS Block II requirement.
JBPDS	Contractor design, fabrication, platform integration and testing of JBPDS prototypes. Low Rate Initial Production (LRIP) decision in FY00 will provide production representative systems for Initial Operational Test and Evaluation (IOT&E) in FY01, and ramp up production base for fielding in FY02.
JBPDS Block II	Government run modeling and simulation results will be given to one or more contractors for brass board development and testing. The preferred design will be carried through the rest of EMD by a prime systems contractor. JBPDS Block II will advance biological point detection capabilities (smaller, lower power, dry detection technologies, etc.) for operational level systems.
IBADS	In-house installation and support of rapid prototypes.
JBSDS	This program will rely heavily on the Technology Transition-Bio program for the early development of Program Definition and Risk Reduction (PDRR) for collection and detection technologies. Program will utilize a streamlined Engineering and Manufacturing Development.

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
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PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)
PROJECT
BJ5

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
ABPDS												
Trigger/Sampler Upgrade Development			3Q									
Complete Advanced Concept Technology Demonstration (ACTD) CLS Support	1Q											
Site Installation and Training				4Q								
CRP												
ITF-6A List Complete				4Q								
JBPDS												
Perform Engineering, Design and Test (EDT)	>>	2Q										
Perform Pre Production Qualification Test (PPQT)			3Q									
Low Rate Initial Production (LRIP) In Process Review (IPR)				4Q								


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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)
PROJECT
BJ5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JBPDS (Cont)												
Perform Initial Operational Test and Evaluation							3Q					
Block I Milestone III								4Q				
Block I First Unit Equipped										2Q		
JBPDSBLK2												
Analysis of Alternatives/Concept Studies				4Q				 4Q				
Engineering and Manufacturing Development (EMD) Request for Proposal (RFP) Release and Source Selection											3Q	4Q

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ABPDS													
HW C - Develop Portal Shield Equipment	MIPR	Naval Research Laboratory, Wash., DC	U	405	0	NONE	0	NONE			0	405	0
CRP													
HW C - Purchase of Critical Reagent Products	PO	Naval Medical Research Institute, Bethesda, MD	C	513	200	Jan-01	208	Jan-02			0	921	0
JBPDSBLK2													
SW SB - Block II Hardware Development	C/CPIF	TBD	C	0	0	NONE	8436	2Q FY02			15943	24379	0
SW S - Block II Software Development	SS/CPIF	TBD	C	0	0	NONE	1596	2Q FY02			4376	5972	0
SW S - JBPDS Block II Software Documentation	MIPR	Life Cycle Software Engineering Center, Picatinny, NJ	U	0	0	NONE	500	1Q FY02			1172	1672	0
Subtotal I. Product Development:				918	200		10740				21491	33349	

Remarks:

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5**

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ABPDS													
ILS S - Portal Shield Contractor Logistics Support	PO	Camber Corp., Huntsville, AL	C	2083	0	NONE	0	NONE			0	2083	0
CRP													
TD/D SB - Critical Reagent Product	MIPR	SBCCOM, APG, MD	U	400	100	Jan-01	100	Jan-02			0	600	0
IBADS													
ILS S - Continued Support of Fielded IBAD Systems	MIPR	NSWC, Dahlgren, VA	U	311	307	1Q FY01	317	1Q FY02			0	935	0
JBPDSBLK2													
ES S - Engineering Support	MIPR	NSWC, Dahlgren, VA	U	0	1087	1Q FY01	2304	1Q FY02			4830	8221	0
ILS S - Integrated Logistics Support	C/CPIF	TBD	C	0	0	NONE	1696	2Q FY02			2171	3867	0
TD/D S - Tech Data Documentation	SS/CPIF	TBD	C	0	0	NONE	600	2Q FY02			2900	3500	0
JBSDS													
TD/D SB - Technology Analysis to Support Component Selection	PO	TBD		0	0	NONE	0	NONE			1000	1000	0
ES S - System Engineering Design Study	PO	TBD		0	0	NONE	0	NONE			4055	4055	0
Subtotal II. Support Costs:				2794	1494		5017				14956	24261	

Remarks:

Project BJ5

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ABPDS													
OTHT SB - Portal Shield Test Support	MIPR	Dugway Proving Ground, UT	U	88	0	NONE	0	NONE			0	88	0
CRP													
OTHT C - Maintain Critical Reagent Repositories	PO	SBCCOM, APG, MD		0	300	Jan-01	300	Jan-02			0	600	0
OTHT C - Antigen Development	PO	Dugway Proving Ground, UT		108	163	Jan-01	190	Jan-02			0	461	0
JBPDS													
OTES - Funding Support for Block I IOT&E	MIPR	ATEC/AFOTEC, Washington, D.C.	U	0	3183	1Q FY01	0	NONE			0	3183	0
JBPDSBLK2													
OTHT C - Joint Field Trials	Various	Dugway Proving Ground, UT	U	0	0	NONE	732	1Q FY02			0	732	0
Subtotal III. Test and Evaluation:				196	3646		1222				0	5064	

Remarks:

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BUDGET ACTIVITY
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 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
BJ5

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ABPDS													
PM/MS S - Program Management/Program Manager Support	Various	JPO-BD, Falls Church, VA	U	145	0	NONE	0	NONE			0	145	0
PM/MS C - Program Manager Training	MIPR	USAMRIID, Fort Detrick, MD	U	3	0	NONE	0	NONE			0	3	0
CRP													
PM/MS S - Program Management/Program Manager Support	SS/CPFF	Camber Corporation, Huntsville, AL	C	192	342	Jan-01	350	Jan-02			0	884	0
IBADS													
PM/MS S - Program Management/Program Manager Support	Various	JPO-BD, Falls Church, VA	U	17	17	1Q FY01	19	1Q FY01			0	53	0
JBPDSBLK2													
PM/MS S - Program Management/Program Manager Support	PO	JPO-BD, Falls Church, VA		0	150	1Q FY01	830	1Q FY02			2111	3091	0
JBSDS													
PM/MS S - Program Management/Program Manager Support	Various	JPO-BD, Falls Church, VA	U	0	0	NONE	0	NONE			1315	1315	0

Project BJ5

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) BJS

IV. Management Services - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	101	Oct-00	0	NONE			0	101	101
Subtotal IV. Management Services:				357	610		1199				3426	5592	

Remarks:

TOTAL PROJECT COST:	4265	5950		18178				39873	68266	
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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CA5

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
CA5 CONTAMINATION AVOIDANCE (EMD)	61717	61208	64099							

A. Mission Description and Budget Item Justification:

Project CA5 CONTAMINATION AVOIDANCE (EMD): This project funds Engineering and Manufacturing Development (EMD) of an array of reconnaissance, detection, identification equipment and warning systems.

Efforts funded in this project are: (1) CB Mass Spectrometer (CBMS), (2) Nuclear, Biological and Chemical Reconnaissance System (NBCRS) Block II, (3) Joint Chemical Agent Detector (JCAD), (4) Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD), (5) Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System (JSLNBCRS), and (6) Joint Warning and Reporting Network (JWARN).

The CBMS will provide significant enhancements by simultaneously detecting and identifying chemical and biological threat agents at lower system cost. CBMS will replace the MM1 Mass Spectrometer in the NBCRS Block I and will be a component of the JSLNBCRS.

The JCAD program will develop a miniaturized, ruggedized, and portable point chemical agent detector that automatically and simultaneously detects, identifies, quantifies, and alerts in the presence of nerve, blister and blood agents. JCAD will be used for aircraft, shipboard, wheeled vehicles, stand alone, and individual soldier applications.

The JSLNBCRS is a new lightweight NBC detection and identification system and will consist of a Base Vehicle (BV) equipped with hand-held, portable and mounted, current, and advanced NBC detection and identification equipment. The JSLNBCRS will provide on-the-move reconnaissance and surveillance in support of combat, combat support, and combat service support forces. There will be two variants of the JSLNBCRS: the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) variant and the Light Armored Vehicle (LAV) variant.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CA5

PROJECT

CA5

The JSLSCAD utilizing passive infrared technology, provides a first-time on-the-move automatic scanner and chemical stand-off detection capability to the Services. The JSLSCAD will replace the M21 Remote Standoff Chemical Agent Alarm (RSCAAL).

The JWARN will provide standard integration and analysis of NBC detection information with Command, Control, Communication, Computers, Information and Intelligence (C4I2) on the battlefield automating the NBC warning and reporting processes currently performed manually throughout the Services. The JWARN will collectively consist of Commercial Off the Shelf (COTS) materiel and JWARN software for C4I2. JWARN is being developed for deployment with NBC detectors in the following battlefield applications: combat and armored vehicles, tactical vehicles, vans, shelters, shipboard application, area warning, semi-fixed sites, and fixed sites. Block I was the initial acquisition and fielding of COTS and Government Off the Shelf (GOTS) software to standardize NBC warning and reporting throughout the Armed Forces. Block II will integrate NBC legacy and future detector systems, NBC Warning and Reporting Software Modules, and NBC battlespace Management Modules in the Joint Services C4I systems. Block III will investigate new NBC warning and reporting software technologies and developmental NBC detector/sensors. Block III will also investigate software changes to Service C4I systems.

The NBCRS (M93 Fox) is a dedicated system of nuclear and chemical detection and warning equipment, and biological sampling equipment integrated into a high speed, high mobility armored carrier capable of performing NBC reconnaissance on primary, secondary, or cross country routes throughout the battlefield. The NBCRS Block II improvement of the NBCRS will meet all of the requirements contained in the approved requirements document.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CA5

PROJECT

CA5**FY 2000 Accomplishments:**

- 1770 CBMS - Finalized design of the Block II to allow for simultaneous detection and identification of chemical and biological threat agents at lower system cost.
- 2271 CBMS - Completed fabrication of nine pre-production units.
- 2578 CBMS - Completed engineering tests to establish technical performance baseline.
- 3734 CBMS - Completed engineering drawings and specifications for integration into the JSLNBCRS and NBCRS Block II.
- 4660 JCAD - Completed fabrication of six JCAD Phase I prototypes (with a total unit price of \$1.154M each). Continued Phase II hardware and software development. Modified the selected sensor module, and updated the algorithms to reflect lessons-learned from prototype testing.
- 2781 JCAD - Conducted first Critical Design Review and evaluated engineering design tests (EDT) issues.
- 3104 JCAD - Completed unit-specific systems integration on the Phase I prototypes. Continued systems integration planning for Phase II final production units.
- 1196 JCAD - Completed JCAD Phase I prototype testing and evaluation on six engineering development test units. Planned Phase II test and evaluation.
- 3712 JSLNBCRS - Completed integration of three High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) variants.
- 2846 JSLNBCRS - Completed HMMWV variant Developmental Test I (DT I) at Dugway and Yuma Proving Grounds.
- 908 JSLNBCRS - Prepared initial Technical Data Package (TDP) for HMMWV variant.
- 2200 JSLSCAD - Completed fabrication of 15 Engineering Design Test (EDT) articles (\$146K each).
- 5549 JSLSCAD - Conducted Critical Design Review (CDR). Incorporated changes to design based on EDT results.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT CA5

FY 2000 Accomplishments (Cont):

- 5445 JSLSCAD - Conducted engineering test to include environmental extremes, shock and vibration, Electromagnetic Interference (EMI), Electromagnetic Pulse (EMP), reliability growth, and agent testing. Completed test methodology development.
- 3052 JSLSCAD - Purchased long lead items for 40 Production Qualification Testing/Initial Operational Test & Evaluation (PQT/IOT&E) test articles (long lead parts \$76.3K each).
- 799 JSLSCAD - Reviewed and prepared all program documents, which included technical manuals, logistics support analysis report, training materials, plans, and support for simulation and modeling.
- 1100 JSLSCAD - Continued integration for Joint Service Lightweight Nuclear Biological and Chemical Reconnaissance System (JSLNBCRS), CH-53 helicopter, and C-130 fixed wing test platforms.
- 826 JWARN - Prepared program documentation for Milestone II and provided IPT support to other Services.
- 7550 JWARN - Completed Milestone II and awarded EMD contract for Block II integration of NBC legacy and future detector systems. Developed NBC warning and reporting modules and battlespace management modules for use by Joint Services C4I2 systems.
- 2400 NBCRS Block II - Purchased developmental detectors and component parts for integration into vehicle. Items purchased included: one Chemical Biological Mass Spectrometer (CBMS) for \$400K; four CBMS component sets for \$1200K; CBMS algorithm for \$300K; one Joint Service Lightweight Chemical Agent Detector (JSLSCAD) for \$200K; and five communications sets for \$300K.
- 886 NBCRS Block II - Started NBC sensor suite software development.
- 2350 NBCRS Block II - Awarded development contract. Conducted NBCRS suite engineering development.

Total 61717

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT CA5

FY 2001 Planned Program:

- 4678 JCAD - Continue Phase II hardware and software development of final production representative units (average unit costs of \$.079M each).
- 2953 JCAD - Continue systems engineering, manufacturing, and logistics development for final production representative units.
- 3950 JCAD - Continue systems integration on 168 JCAD final production representative units for operational test and evaluation.
- 796 JCAD - Initiated Phase II engineering test and evaluation. Start production qualification tests, and continue to plan operational tests.
- 3874 JSLNBCRS - Conduct LAV variant PDR/CDR reviews, build two integrated LAV variants, fix/redesign HMMWV variant.
- 7302 JSLNBCRS - Conduct Limited User Test (LUT), HMMWV variant development test, and DT II for HMMWV variant.
- 1015 JSLSCAD - Complete integration for JSLNBCRS, CH-53 helicopter, and C-130 fixed wing test platforms.
- 3800 JSLSCAD - Complete EDT. Review and modify system design to incorporate test review results.
- 4400 JSLSCAD - Fabricate 40 Production Qualification Testing/Initial Operational Test & Evaluation (PQT/IOT&E) test articles (\$100K each).
- 8834 JSLSCAD - Init iate PQT/ IOT&E which includes environmental extremes, shock and vibration, Electromagnetic Interference (EMI), Electromagnetic Pulse (EMP), agent, and shipboard, helicopter, airplane, and ground vehicle field testing.
- 799 JSLSCAD - Prepare and review technical data package and acquisition documentation for Joint Service Milestone III decision in FY02.

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CA5

PROJECT

CA5

FY 2001 Planned Program (Cont):

- 7093 JWARN - Continue Block II integration of NBC legacy and future detector systems. Develop NBC warning and reporting modules and battlespace management modules for use by Joint Services C4I2 systems.
- 8265 NBCRS Block II - Continue sensor suite engineering development.
- 100 NBCRS Block II - Initiate plans for Developmental Test and Evaluation (DTE). Finalize Test and Evaluation Master Plan (TEMP).
- 515 NBCRS Block II - Continue software development.
- 1845 NBCRS Block II - Assemble and integrate developmental detectors into vehicles.
- 989 SBIR

Total 61208

FY 2002 Planned Program:

- 3920 JCAD - Complete hardware and software for production representative units delivery and reports.
- 3578 JCAD - Complete systems engineering, manufacturing, and logistics development for final production representative units.
- 3413 JCAD - Complete system integration on final Milestone III representative units.
- 4173 JCAD - Complete Phase II engineering test and evaluation, production qualification tests, and operational tests.
- 3300 JSLNBCRS - Start Initial Operational Test & Evaluation (IOT&E).
- 2400 JSLNBCRS - Continue Limited User Test (LUT) of HMMWV variant at the U.S. Army Test Activity.

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DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CA5

PROJECT

CA5

FY 2002 Planned Program (Cont):

- 4000 JSLNBCRS - Start Software and Hardware engineering development and integration of commercial off the shelf , government off the shelf software hardware and Non-Developmental Item software hardware products to the maximum extent possible for HMMWV & LAV variants .
- 1300 JSLNBCRS - Continue Developmental Test II (DTII) at Dugway and Yuma proving ground.
- 2012 JSLNBCRS - Initiate Toxic Industrial Chemical (TIC's) and Toxic Industrial Materials (TIM's) software development for CBMS transition to JSLNBCRS procurement.
- 3334 JSLSCAD - Complete Production Qualification Testing and Initial Operational Test & Evaluation (PQT/IOT&E).
- 1000 JSLSCAD - Complete technical data package and acquisition documentation for Milestone III. All program documentation will be reviewed and updated to support MS III. This includes: Acquisition Strategy; Acquisition Baseline; Performance Specifications; and Environment Assessment. In Process Review (IPR) package preparation and coordination is also included.
- 1545 JSLSCAD - Complete review and preparation of technical manuals, logistics support, and training materials. All logistics documentation to include: Technical Manuals; Integrated System Support Plans; and Logistics Support Plans will be updated based on test results. In addition, Materiel Fielding Plans, fielding schedules, and platform integration guides will be prepared and approved.
- 13175 JWARN - Continue Block II integration of NBC legacy and future detector systems. Develop NBC warning and reporting modules and battlespace management modules for use by Joint Services C4I2 systems.
- 693 JWARN - Prepare integrated logistic support technical data.
- 1422 JWARN - Conduct Block II modeling and simulation.
- 2124 JWARN - Conduct Block II system Test and Evaluation (T&E).

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PE NUMBER AND TITLE

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PROJECT

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FY 2002 Planned Program (Cont):

- 1875 NBCRS Block II - Conduct Modeling and Simulation (M&S) of human factors.
- 5800 NBCRS Block II - Continue sensor suite engineering development and refurbish prototypes.
- 2624 NBCRS Block II - Continue integration of developmental detectors into vehicles.
- 2411 NBCRS Block II - Begin warfighter operational capability assessment.

Total 64099

B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
N00041 SHIPBOARD DETECTOR MODIFICATIONS	8725	4644	4703							

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C. Acquisition Strategy:

CBMS

Contract development and fabrication of prototype test hardware, contractor testing, integration by host platforms, and contract fabrication of production units. The CBMS Block I (PDRR phase) was developed under a task order contract with Bruker Industries. The system was type-classified as part of the P3I BIDS system. The CBMS Block II (EMD phase) was developed under an interagency agreement with Oak Ridge National Lab, with Orbital Sciences Corp as the main subcontractor. The system will be type classified as a component of the Fox Block II system (IAV-NBCRV) and the Joint Service Lightweight NBCRS system. A PDRR effort is being initiated to configure the system as a stand-alone system.

JCAD

Competitive contract development and fabrication, contractor and government testing. Potential for sole source initial procurement to the development contractor.

JSLSCAD

The JSLSCAD is a five year contract development effort with Intellitec of Deland, FL. Development includes ground, air, and sea based platforms. Three production follow-on options are planned. The first option is to refurbish the EMD test units. The second and third options are for initial and full scale production, respectively.

JSLNBCRS

Competitive development and fabrication of prototypes. Continue EMD phase and initiate LRIP for HMMWV platform integration.

JWARN

Competitive contract for EMD development and integration of software for Block II. Conduct development and fabrication of hardware/interfaces; test prototypes; contractor/in-house testing; competitive contract fabrication of production units.

NBCRS Blk II

The NBCRS Blk II program is a two phase integration effort to improve the NBCRS Fox detection and reporting capability. The first phase is a joint contractor and in-house effort to design and develop sensor suites to integrate into test vehicles. The second phase is a competitive contract for Production Readiness (completion of Initial Operational Test and Evaluation (IOT&E), and Low Rate Initial Production (LRIP)).

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D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
ACADA												
XM279 Surface Sampler Development	>>							2Q				
JCAD												
Engineering and Manufacturing Development (EMD) Phase I: Prototype Development & Fabrication	>>											
EMD Phase II: Production Representative Unit Development/Fabrication/Test	>>											
Government Production Qualification Test/Development Test									1Q	2Q		
Government Operational Test										2Q		4Q
Milestone III												4Q
JSLNBCRS												
Milestone II							3Q					

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D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSLNBCRS (Cont)												
Preliminary Design Review - LAV									1Q			
Critical Design Review - High Mobility Multipurpose Wheeled Vehicle (LAV)									2Q			
Developmental Test (DT) LAV									3Q			
Development Testing II HMMWV									2Q			
Limited User Test (LUT) HMMWV variant									3Q			
JSLSCAD												
Fabricate Engineering, Design, and Test (EDT) Units	>>	2Q										
Conduct Engineering Test		2Q										

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D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSLSCAD (Cont)												
Pre-Production Qualification Test (PPQT)/Initial Operational Test and Evaluation (IOT&E)							3Q				3Q	
JWARN												
Block II Engineering and Manufacturing Development (EMD) Phase Contract Award			3Q									
Block II DT/Operational Test (OT)												4Q
NBCRSBLKII												
Purchase Government Furnished Equipment (GFE) and Perform Digital Integration	1Q											
Block II R&D Contract Award		2Q										

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D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
NBCRSBLKII (Cont)												
Fabricate Engineering Prototypes						2Q		4Q				
Developmental Test/Operational Test (DT/OT)								4Q		2Q		

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**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CA5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JCAD													
HW/SW-JCAD 6 Units FY00; 168 Units FY01	C/CPAF	BAE SYSTEMS Inc, Austin, TX	C	14237	9208	Nov-00	8097	Nov-01			0	31542	0
JSLNBCRS													
SW S - Develop SW for integration of sensors and dectectors with NBC equipment suite.	C/CPFF	TRW Carson, CA.	C	0	0	NONE	4000	4Q FY01			0	4000	0
JSLSCAD													
HW S - Design & Build hardware	C/CPFF	Intellitec, Deland, FL	C	28000	6000	Nov-00	1000	Nov-01			0	35000	34407
SW S - Develop Software	C/CPFF	Intellitec, Deland, FL	C	10500	814	Nov-00	0	NONE			0	11314	11095
NBCRSBLKII													
HW S - NBCRS Sensor Suite Engineering Development; Fabricate Prototypes; Complete Development	C/CPFF	CACI Technologies Inc, Manassas, VA	C	2000	3240	Dec-00	5074	Dec-01			0	10314	16401
SW SB - Provide Sensor Suite Hardware	MIPR	PM NBCDS, APG, MD	U	2000	5553	Dec-00	2234	Dec-01			0	9787	5865
Subtotal I. Product Development:				56737	24815		20405				0	101957	

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**RDT&E DEFENSE-WIDE/
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0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CA5

PROJECT

I. Product Development- Cont

Remarks: JSLSCAD - HW S - FY00 Purchased long lead items and fabricated hardware: 15 Engineering Design Test (EDT) articles (\$146,000 each); 40 Production Qualification Test/Initial Operational Test and Evaluation (PQT/IOTE); FY01 complete PQT articles. SW S - FY00 develop software: 15 EDT articles; 40 PQT/IOTE articles (\$71,000 each). FY01 complete software.

NBCRS Blk II - HWS - FY00-FY03 sensor suite engineering development. FY01 prototype fabrication. FY03 - complete development. HW GFPP - FY00 & FY01 provide sensor suite components to include Chemical Biological Mass Spectrometer (CBMS) and Joint Service Lightweight Chemical Agent Detector (JSLSCAD) to contractor - five each, FY02 provide four each.

JWARN - FY00 funded Block II Integration contract award delayed pending Milestone II decision.

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II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JCAD													
Technical Data and Logistics Support	MIPR	Various	U	840	429	Nov-00	444	Nov-01			0	1713	0
JSLNBCRS													
ES C - CSS Support	C/FP	Sverdrup, Dumfries, VA	C	0	306	Dec-00	0	NONE			0	306	0
HW C - Integration contract	C/FFP	TRW, Carson, CA		7550	3780	Mar-01	2012	Mar-02			0	13342	0
JSLSCAD													
TD/D SB - JSLSCAD Evaluation of Engineering changes	C/CPFF	PM NBC Defense Systems, APG, MD	U	200	390	Nov-00	280	Nov-01			0	870	870
ILS S - JSLSCAD ILS Analysis and Documentation	C/CPFF	Intellitec, Deland, FL	C	1400	165	Nov-00	750	Nov-01			0	2315	2315
TD/D SB - JSLSCAD Technical Manuals and Documents	C/CPFF	Intellitec, Deland, FL	C	600	20	Nov-00	30	Nov-01			0	650	650
JWARN													
ES S - Modeling and Simulation	MIPR	SBCCOM, APG, MD	U	0	0	NONE	1422	Mar-02			0	1422	0
ILS S - Prepare Technical Data	C/FFP	Sverdrup, Dumfries, VA	C	0	0	NONE	693	Mar-02			0	693	0
HW S - Block II HW/SW Integration Contract	C/FFP	TBS	C	7550	6314	1Q FY01	11664	1Q FY02			0	25528	0
Subtotal II. Support Costs:				18140	11404		17295				0	46839	

Remarks: JSLSCAD - ESS - Government and contractor support needed to evaluate Engineering Design Test (EDT), and Production Qualification Test (PQT) data; ILS S - Government and contractor Integrated Logistics Support (ILS); TD/D SB - Technical manuals and documentation.

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JCAD													
DTE S - JCAD DT/PQT Testing	MIPR	Various Govt	U	3624	796	Mar-01	2086	Mar-02			0	6506	0
OTE S - JCAD Govt OT Costs	PO	Various Govt	U	0	0	NONE	2087	Jan-02			0	2087	0
JSLNBCRS													
OTHT SB - Conduct Limited User Test of HMMWV	MIPR	Various	U	0	6263	Mar-01	2400	4Q FY01			0	8663	0
OTE S - Conduct Initial OT&E for the HMMWV variant.	MIPR	Various	U	0	0	NONE	3300	4Q FY01			0	3300	0
DTE S - Conduct Developmental Test II (DTII) for Hmmwv variant.	MIPR	Various	U	0	0	NONE	1300	4Q FY01			0	1300	0
JSLSCAD													
OTHT SB - JSLSCAD Technical Testing and Test Methodology	Various	DPG, UT; PNAS, Patuxent, MD	U	7200	2500	Nov-00	0	NONE			0	9700	8268
OTHT SB - JSLSCAD PQT/IOTE and Integration Test	Various	DPG, UT; PNAS, Patuxent, MD	U	1100	5959	Nov-00	3439	Nov-01			0	10498	9767
OTHT SB - Engineering Design Test, and PQT and IOT&E Support	C/CPFF	Intellitec, Deland, FL	C	1500	2800	Nov-00	0	NONE			0	4300	3464
JWARN													
DTE S - DT I Testing of System	WR	MCSC, Quantico, VA	U	0	0	NONE	251	NONE			0	251	0

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PROJECT

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III. Test and Evaluation - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
DTE S - System Test and Evaluation of C4I Software Modules	MIPR	MCSC, Quantico, VA	U	0	0	NONE	2124	Nov-01			0	2124	0
NBCRSBLKII													
OTE S - Conduct Operational Demonstration	Various	PM NBCDS, APG, MD	U	0	0	NONE	2160	Dec-01			0	2160	3244
OTE SB - Modeling and Simulation (M&S)	PO	CACI Technologies Inc., Manassas, VA		0	0	NONE	1632	Dec-01			0	1632	1632
Subtotal III. Test and Evaluation:				13424	18318		20779				0	52521	

Remarks:

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IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JCAD													
PM/MS C - PM/MS C	PO	Various - Government Contractor Support	U	2861	1944	Nov-00	2370	Nov-01			0	7175	0
JSLNBCRS													
PM/MS C - Joint Service IPT Support	MIPR	Various	U	0	827	Mar-01	0	NONE			0	827	0
JSLSCAD													
PM/MS S - JSLSCAD Prepare Acquisition Documentation through Milestone III IPR	PO	PM NBC Defense Systems, APG, MD	U	2000	200	Nov-00	380	NONE			0	2580	2580
JWARN													
PM/MS C - Joint IPT Support	MIPR	Various	U	826	779	NONE	1260	Feb-02			0	2865	0
NBCRSBLKII													
PM/MS S - Engineering Management	Various	PM NBCDS, APG, MD	U	809	1932	Dec-00	1610	Dec-01			0	4351	4197
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	989	Oct-00	0	NONE			0	989	989
Subtotal IV. Management Services:				6496	6671		5620				0	18787	

Remarks: NBCRS Blk II - Salaries and Other Government Agencies (OGA's).

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TOTAL PROJECT COST:				94797	61208		64099				0	220104	
Project CA5													
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**RDT&E DEFENSE-WIDE/
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PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
CO5 COLLECTIVE PROTECTION (EMD)	4835	3232	4012							

A. Mission Description and Budget Item Justification:

Project CO5 COLLECTIVE PROTECTION (EMD): This project provides Engineering and Manufacturing Development (EMD) of Joint Service Nuclear, Biological & Chemical (NBC) collective protection systems that are smaller, lighter, less costly to build and maintain, and more logistically supportable to enable mission accomplishment in NBC environments. Collective protection platforms include shelters, vehicles, ships, aircraft, buildings, and hospitals. As Techbase Non-Medical Collective Protection efforts become mature, they will be transitioned into the following EMD efforts.

Systems funded under this project are: (1) Shipboard Collective Protection Equipment (SCPE); (2) Joint Collective Protection Equipment (JCPE); 3) Joint Transportable Collective Protection System (JTCOPS); and 4) Chemical Biological Protective System (CBPS) P3I.

The SCPE program provides an NBC free environment within specified zone boundaries of high priority ships by providing overpressurization with filtered air. One of the major goals of this program is to extend the service life of shipboard High Efficiency Particulate Air (HEPA) filters. Current efforts are focused on extending the service life from three years to four years. The program will continue testing of collective protection system components that decrease Total Ownership Costs (TOC), reduce shipboard maintenance requirements, and provide energy-efficient equipment.

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PROJECT

CO5

The JCPE program will provide needed improvements and cost saving standardization to currently fielded systems. Standardization of individual system components (specifically filter systems) across Joint Service mission areas will reduce logistics burden while maintaining the industrial base. JCPE will focus on fixing specific problems and deficiencies with currently fielded equipment. JTCOPS will provide the long term solution to portable shelters only, while JCPE provides improvements to current fixed site, building, shipboard, and vehicle collective protection systems. JCPE's efforts on portable shelters are limited to providing an interim capability until JTCOPS is fielded. JCPE will specifically insert off-the-shelf technologies into these older systems to: 1) solve reliability, maintainability, and operational problems, 2) significantly reduce manufacturing and/or operating costs, 3) solve previously unmet requirements, 4) provide low-level interim capabilities until JTCOPS enters production.

JTCOPS will use the latest technologies to provide the next generation of lightweight, modular, self-supporting collective protection shelter systems. JTCOPS Block I will backfit selected existing standard military tent systems with a collective protection capability beyond that which is currently available. JTCOPS Block II will fully integrate next-generation collective protection into future military tent systems to provide NBC protection that is inherent to the system.

The CBPS-P3I will: (1) Improve the operational suitability and reliability of the CBPS for light divisions that is currently in production. This phase of the P3I will develop a self-sustained Environmental Support System (ESS) that does not require the HMMWV engine for power resulting in reduced vehicle maintenance and sustainment costs. To improve operational capability, further system weight reductions will be implemented to allow for more medical equipment to be transported inside the CBPS. Improvements will be made to the CB tent using lightweight, low cost CB materials being developed in R&D. All these improvements will be incorporated into CBPS production line in FY04 following a Production Verification Test; (2) Provide a critical capability to address the need for collective protection within Level 1 and 2 Heavy and Airborne units. Currently, no capability exists to provide medical treatment in a CB contaminated environment for these types of units. The self-sustained ESS and CB tent of CBPS-light will be used to maximize commonality of components. These components will be integrated onto platforms suitable for Airborne and Heavy divisions. The CBPS P3I contract will have three phases: Phase 1: Develop design concepts and fabricate prototype ESS; Phase 2: Fabricate three ESS prototypes for integration onto each of three CBPS platforms; and Phase 3: Fabricate CBPS Heavy and Airborne prototype systems.

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CO5**FY 2000 Accomplishments:**

- 1643 JCPE - Performed tradeoff analysis to optimize the M48A1 and M56 carbon filter designs to extend the filter life and reduce manufacturing costs. Performed market survey and tradeoff analysis to identify candidate motorblowers that provided the best combination of improved efficiency, transportability, and reduced procurement costs for future development and testing on Modular Collective Protection Equipment (MCPE), M20A1 Simplified Collective Protection Equipment (SCPE), and various applications of M28 SCPE. Initiated redesign of the M49 Fixed Installation Filter (FIF) to reduce production costs. Initiated development of improved 200 cubic feet per minute (CFM) particulate filter to extend filter life. Initiated development of Acceptance Tester to verify performance of the Recirculation Filter Unit (RFU) used on MCPE and Chemically Protected Deployable Medical Shelter System.
- 696 JCPE - Initiated development of lightweight Environmental Control Unit (ECU) to meet the rapid deployment requirement for transportable collective protection systems. Initiated development of two prototype hardened Modular General Purpose Tent Systems (MGPTS) using an M28 (Variant) collective protection liner, motorblower, hermetically sealed NBC filter canister (HSFC), and the existing NBC rated ECU to meet the Marine Corps requirement for an environmentally controlled transportable collective protection system until the Joint Transportable Collective Protection System (JTCOPS) is fielded.
- 1795 JTCOPS - Prepared program documentation including the Single Acquisition Management Plan, the System Requirements document and the Life Cycle Cost Assessment. Prepared a draft Request for Proposals, obtained engineering support, and conducted program management activities.
- 701 SCPE - To reduce logistics costs, developed and initiated testing on nine V-cell (mini-pleat) Limited Protection (LP) HEPA filters. Initiated land-based testing of four improved Collective Protection System (CPS) fans. Completed first year of verification testing to validate the four-year performance of 34 improved prefilters and 66 improved HEPA filters. Prepared and updated documentation (test reports, technical manuals, and technical data packages (TDPs).

Total 4835

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BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5****FY 2001 Planned Program:**

- 1236 JCPE - Complete development and testing of 20 improved 200 CFM particulate filters to reduce logistics costs. Complete redesign and testing of M49 FIF filter to reduce costs, production time, and waste. Complete development of M48A1 and M56 carbon filter improvements to extend filter life and reduce manufacturing and logistics costs. Complete development of Acceptance Tester to verify performance of the RFU used on MCPE and Chemically Protected Deployable Medical Shelter System. Initiate development of a single pleatable charcoal/HEPA bonded filter to replace two chemical/biological (CB) filters used in collective protection systems to reduce installation time, logistics, and cost.
- 1250 JCPE - Initiate development and testing of the Filter Fan Assembly (FFA) 400-100 and M93 candidate motorblowers for CB shelter systems to improve efficiency, reliability, size, and weight. Complete development and testing of a lightweight ECU for transportable collective protection systems to allow rapid deployment of a reduced weight and cube unit. Prepare technical drawings for Integrated Logistics Support (ILS) for the Bump Through Door (BTD) airlock modification to the transportable collective protection systems and Chemically Hardened Air Transportable Hospital (CHATH). Initiate development of universal NBC ECU adapter that can apply a transportable cooling coil to the FFA 580 blower and other FFA blower configurations. Complete design and test a prototype one-piece 32-foot liner, 8-foot extension (HUB) and vestibules for use in the Small Shelter System to provide the Air Force Expeditionary Medical Support (EMEDS) system with collective protection capability until JTCOPS is fielded. Complete market surveys and evaluate systems capable of meeting the Operational Requirements Document (ORD) for a CHATH transportable latrine and water distribution system. Development of a transportable latrine and water distribution system was not previously accomplished by the USAF due to funding and schedule constraints.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5****FY 2001 Planned Program (Cont):**

- 691 SCPE - Complete land-based and initiate shipboard testing of one improved CPS fan and develop CPS fan performance specification. Shipboard testing is required to verify actual noise reduction in a fan room and adjacent manned spaces on board a ship. Improved CPS fan will increase efficiency and reduce noise levels by 12 to 17 decibels. Complete second year of verification testing to validate the four-year performance of improved prefilters and HEPA filters. Complete testing of nine V-cell (mini-pleat) LP HEPA filter. Initiate shock and vibration testing on ten commercial off the shelf (COTS) LP HEPA filters. Transition COTS LP HEPA filter to JCPE for further development. Perform literature search and develop a table listing the performance of shipboard CPS filters versus high threat toxic industrial chemicals / toxic industrial materials (TICs/TIMs), leveraging data from Techbase Non-Medical efforts. Initiate development and testing of two electronic differential pressure gauges for remote reading to ease shipboard maintenance. Prepare and update documentation (test reports, technical manuals, and TDPs).
- 55 SBIR

Total 3232

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5**FY 2002 Planned Program:**

- 350 CBPS P3I - Develop design concept for CBPS airborne and heavy versions. Coordinate with user and field representatives on requirements and logistics supportability. Initiate and manage CBPS P3I program.
- 455 CBPS P3I - Award a three phase contract for design and fabrication of a self-powered Environmental Support System (ESS). Award Phase 1 in FY02 to develop an ESS that will meet the requirements for CBPS-light, heavy, and airborne versions. Fabricate one prototype and conduct initial performance and reliability testing for \$455K.
- 1164 JCPE - Initiate development and testing of two types of improved COTS LP HEPA filters to extend filter life and improve performance. Test ten improved M48A1 and M56 carbon filter with live agents to complete qualification of filter design. Complete development of a single pleatable charcoal/HEPA bonded filter to replace two CB filters used in collective protection systems to reduce installation time, logistics, and cost. Conduct testing of RFU acceptance tester. RFU is designed to eliminate low level contamination brought into collective protection systems by personnel or equipment.
- 810 JCPE - Increase efficiency of CPS supply fans by developing a variable speed air supply system to allow the CPS system to operate at peak performance over the entire range of filter loading. Complete development and testing of FFA 400-100 and M93 candidate motorblowers for CB shelter systems to improve efficiency, reliability, size, and weight.
- 514 JCPE - Complete development of the universal NBC ECU adapter that can apply a transportable cooling coil to the FFA 580 blower and other FFA blower configurations. Initiate development of a new Air Force shelter configuration which combines a medium size shelter between two small shelters using an M28 collective protection liner.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5****FY 2002 Planned Program (Cont):**

- 719 SCPE - Continue shipboard testing of improved CPS fan. Shipboard testing is required to verify actual noise reduction in a fan room and adjacent manned spaces on board a ship. Use test data to revise performance specification as necessary. Improved CPS fans will increase efficiency and reduce noise levels by 12 to 17 decibels. Complete third year of verification testing to validate the four-year performance of improved prefilters and HEPA filters. Continue evaluation of potential HEPA filter performance degradation after toxic industrial chemical/material (TIC/TIM) exposure. Continue development and testing of two electronic differential pressure gauges for remote reading to ease shipboard maintenance. Prepare and update documentation (test reports, technical manuals, and TDPs). Initiate transition of selected efforts to JCPE.

Total 4012

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5

B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
JCP001 COLLECTIVELY PROTECTED DEPLOYABLE MEDICAL SYSTEM	2731	5909	3017							
JF0102 TRANSPORTABLE COLLECTIVE PROT SYS	4246	3588	0							
JN0013 NAVY INDIVIDUAL PROTECTIVE GEAR	3369	5406	2328							
JN0014 COLLECTIVE PROT SYS AMPHIB BACKFIT	11991	17530	17834							
JN0017 JOINT COLLECTIVE PROT SYSTEMS & IMPROVEMENTS	1186	1043	2395							
R12301 CB PROTECTIVE SHELTER (CBPS)	4103	11365	15694							

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5**C. Acquisition Strategy:**

CBPS/P3I

An up-front analysis will be performed to develop design concepts for Heavy and Airborne versions of CBPS. This development will support the P3I requirement in the ORD for a capability to provide medical treatment in a CB environment in these divisions. The CBPS ORD also addresses the need for a P3I to develop a self-sustained Environmental Support System (ESS) for the current version of CBPS that does not require the High Mobility Multi-Purpose Wheeled Vehicle (HMMVW) engine for primary power. A competitive contract will be awarded to develop and fabricate ESS prototypes suitable for CBPS light, heavy and airborne versions. The ESS prototype will be subjected to performance and reliability testing and the design finalized. Other weight and durability improvements will be investigated and evaluated on the current CBPS. Three ESS prototypes will be fabricated. One ESS will be integrated with the current version of CBPS and validated for use through a Production Verification Test. The ESS and other improvements will be integrated into the existing CBPS production line in FY04. The other two ESS prototypes will be integrated onto platforms determined to be suitable for Heavy and Airborne applications.

JCPE

This program will utilize the modification clause under DOD 5000 to provide solutions to current deficiencies in fielded collective protection equipment. The various efforts under JCPE will leverage Techbase efforts, market analysis, and tradeoff studies to determine the optimum configuration for any modifications or improvements. All modified components will be contractor fabricated and in-house/contractor tested to ensure performance compatibility. Performance and/or procurement specifications will be updated to ensure that modifications are included in future acquisitions. Modified components will be integrated into existing systems via field modification or replacement spares.

JTCOPS

Block I will develop a new collective protection capability for existing DoD shelters. A competitive contract will be awarded for the design and prototype fabrication phase, with options for Low Rate Initial Production (LRIP) and production. After successful completion of development testing and the Milestone II decision, the LRIP option will be exercised to produce systems for Operational Testing (OT). After completion of OT and the Milestone III decision, the production option of the contract will be exercised. Block II is scheduled to begin in FY05.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5

SCPE

In-house/contract design and fabrication of prototype components with in-house/contract testing. Initial fans, motors, and filters will be procured as part of new ship construction using Shipbuilding and Conversion, Navy (SCN) funds. Replacements will be provided with Operation & Maintenance, Navy (O&M,N) funds.

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
CBPS												
CBPS P3I- Initiate Program									1Q			
CBPS P3I- Award Phase 1 Contract									1Q			
CBPS P3I- Conduct Reliability, Availability, and Maintainability (RAM) Testing												4Q
JCPE												
Tradeoff Analysis of M48A1 & M56 Filters				4Q								
Develop Improved M48A1 & M56 Carbon Filters					1Q			4Q				
Agent Testing of M48A1 & M56 Carbon Filters									1Q			4Q

Project CO5

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)
PROJECT
CO5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JCPE (Cont)												
Survey/Tradeoff Analysis of Motorblowers	1Q			4Q								
Develop & Test Improved Motorblowers					1Q							4Q
Redesign & Test FIF	1Q							4Q				
Develop & Test Improved 200 cfm Filter	1Q							4Q				
Develop RFU Acceptance Tester	1Q							4Q				
Test RFU Acceptance Tester									1Q			4Q
Develop & Test Lightweight Environmental Control Unit (ECU)	1Q							4Q				
Modify M28 Liner for MGPTS	1Q			4Q								







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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)
PROJECT
CO5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JCPE (Cont)												
Develop Pleatable Charcoal and High Efficiency Particulate Arresting (HEPA) Filter					1Q							4Q
Prepare Technical Drawings for Bump Through Doors (BTDs)					1Q							
Develop Universal NBC ECU Adapter					1Q							4Q
Modify/Test M28 Liner for Small Shelter					1Q							
Latrine/Water Distribution System Market Survey					1Q							
Develop and Test Limited Production High Efficiency Particulate Arresting (HEPA) Filters									1Q			

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BUDGET ACTIVITY








**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JCPE (Cont)												
Develop & Test Variable Speed CPS Supply Fans									1Q			4Q
Develop Small-Medium-Small Shelter Liner									1Q			4Q
SCPE												
Fan Testing & Evaluation (Land-based)	>>							4Q				
Develop CPS Fan Performance Specification		2Q										4Q
Fan Testing & Evaluation (Shipboard)					1Q							4Q
Develop and Test Electronic Differential Pressure Gauge					1Q							4Q
CPS Filter TICs/TIMs Evaluation					1Q							4Q
Revise CPS Fan Performance Specification											3Q	4Q

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

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**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5**

D. Schedule Profile (cont):

FY 2000

FY 2001

FY 2002

1

2

3

4

1

2

3

4

1

2

3

4

SCPE (Cont)

Transition to JCPE

3Q

4Q

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
CBPS													
HW SB - Contractor Hardware Development	C/CPFF	TBD	C	0	0	NONE	455	Dec-01			0	455	0
JCPE													
HW SB - 200 CFM HEPA - Market Survey of Media	WR	NSWCDD, Dahlgren, VA	U	305	185	Dec-00	0	NONE			0	490	490
HW SB - FIF - Engineering & Prototype Development	MIPR	SBCCOM, Edgewood, MD	U	163	124	Dec-00	0	NONE			0	287	287
HW SB - Carbon Filter - Market Survey & Prototype Development	MIPR	SBCCOM, Edgewood, MD	U	484	467	Dec-00	0	NONE			0	951	951
HW SB - Pleatable Charcoal/HEPA Filter - Development	MIPR	SBCCOM, Edgewood, MD	U	0	194	Dec-00	200	Dec-01			0	394	394
HW SB - Improved Motorblower - Market Survey & Prototype Development	MIPR	SBCCOM, Edgewood, MD	U	338	194	Dec-00	200	NONE			0	732	732
HW SB - Lightweight ECU Development and Engineering	MIPR	Various	U	213	69	Dec-00	0	NONE			0	282	282
HW SB - Universal NBC ECU Adapter - Development	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	25	Dec-00	114	Dec-01			0	139	139
HW SB - Small Shelter - Develop M28 Liner	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	243	Dec-00	0	NONE			0	243	243

Project CO5

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/**BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5

I. Product Development - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
HW SB - Transportable Latrine & Water Distribution System - Market Survey	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	120	Dec-00	0	NONE			0	120	120
HW C - LP HEPA Filter - Market Survey and Improvements	WR	NSWCDD, Dahlgren, VA	U	0	0	NONE	376	Dec-01			150	526	676
HW C - NSIF - Market Survey and Improvements	WR	NSWCDD, Dahlgren, VA	U	0	0	NONE	0	Dec-01			400	400	550
HW C - Residual Life Indicator - Transition Tech Base Technology to NBC Filters	MIPR	SBCCOM, Edgewood, MD	U	0	0	NONE	0	Dec-01			1200	1200	1511
HW C - CPS Supply Fans - Market Survey and Development	WR	NSWCDD, Dahlgren, VA	U	0	0	NONE	110	Dec-01			300	410	625
HW C - Lightweight Power Production - Market Survey and Development	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	0	NONE	0	Dec-01			0	0	100
HW C - Small/Medium/Small Shelter - M28 Liner Development	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	0	NONE	350	Dec-01			0	350	450
HW SB - RFU Acceptance Tester - Development	MIPR	SBCCOM, Edgewood, MD	U	0	0	NONE	200	Dec-01			0	200	273

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CO5**

I. Product Development- Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SCPE													
HW C - CPS Fan, Electronic Differential Pressure Gauge, Filter Performance - Development	WR	NSWCDD, Dahlgren, VA	U	0	75	Dec-00	125	Dec-01			0	200	325
Subtotal I. Product Development:				1503	1696		2130				2050	7379	

Remarks:

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PROJECT

CO5

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
CBPS													
ES S - Shelter Government Engineering Support	Allot	SBCCOM - Natick, MA	U	0	0	NONE	300	Oct-01			0	300	0
ILS S - Shelter - Contractor ILS Support	Various	TBD	C	0	0	NONE	25	Oct-01			0	25	0
TD/D S - Shelter - Technical Data and Documentation	Various	TBD	C	0	0	NONE	0	NONE			0	0	0
JCPE													
TD/D SB - BTM Airlock TDP Development	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	145	Dec-00	0	Dec-01			0	145	145
TD/D SB - 200 CFM HEPA Filter - Engineering Support for Market Survey	C/CPFF	Synetics, Dahlgren, VA	C	49	50	Dec-00	0	NONE			0	99	99
SCPE													
TD/D SB - Update/Develop TDPs, Perf Specs, Drawings, and Reports	WR	NSWCDD, Dahlgren, VA	U	786	98	Dec-00	169	Dec-01			0	1053	1190
Subtotal II. Support Costs:				835	293		494				0	1622	

Remarks:

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PROJECT

CO5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
CBPS													
DTE S - Shelter - Development Test and Evaluation	MIPR	TBD	U	0	0	NONE	0	NONE			0	0	0
JCPE													
OTHT C - Carbon Filter - Live Agent Testing	MIPR	SBCCOM, Edgewood, MD	U	0	0	NONE	388	Dec-01			0	388	738
OTHT SB - 200 CFM HEPA Filter - Testing Media and Assemblies	C/CPFF	Battelle, Columbus, OH	N	129	144	Dec-00	0	NONE			0	273	273
OTHT SB - FIF - Prototype Testing	MIPR	SBCCOM, Edgewood, MD	U	30	70	Dec-00	0	NONE			0	100	100
OTHT C - Improved Motorblower - Acceptance Testing	MIPR	SBCCOM, Edgewood, MD	U	0	0	NONE	200	Dec-01			0	200	200
OTHT C - Lightweight ECU - Prototype Testing	MIPR	Eglin AFB, Valparaiso, FL	U	0	100	Dec-00	0	NONE			0	100	100
OTHT C - CPS Supply Fans - Testing Prototype System	WR	NSWCDD, Dahlgren, VA	U	0	0	NONE	0	NONE			150	150	300
OTHT SB - Lightweight Power Production - Prototype Testing	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	0	NONE	0	Dec-01			0	0	50
OTHT SB - Small/Medium/Small - M28 Liner Testing	MIPR	HSW/YACN, Brooks AFB, San Antonio, TX	U	0	0	NONE	0	NONE			0	0	100

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BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5

III. Test and Evaluation - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
OTHT S - RFU Acceptance Tester - Testing	MIPR	SBCCOM, Edgewood, MD	U	0	0	NONE	0	NONE			0	0	100
SCPE													
OTHT SB - Improved CPS Fan - Shipboard Testing	WR	NSWCDD, Dahlgren, VA	U	0	99	Dec-00	155	Dec-01			0	254	409
OTHT SB - Improved CPS Fan - Landbased Testing	WR	NSWCDD, Philadelphia, PA	U	110	99	Dec-00	0	NONE			0	209	209
OTHT SB - Improved CPS Fan - Additional Landbased Testing	C/FP	New World Associates, Fredericksburg, VA	C	60	100	Jun-01	0	NONE			0	160	160
OTHT SB - Filters - Various Component Testing and Testing Electronic Differential Pressure Gauge	WR	NSWCDD, Dahlgren, VA	U	770	70	Dec-00	120	Dec-01			0	960	1080
OTHT C - HEPA Filter TIC/TIM Evaluation	WR	NSWCDD, Dahlgren, VA	U	0	50	NONE	50	Dec-01			0	100	150
Subtotal III. Test and Evaluation:				1099	732		913				150	2894	

Remarks:

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RDT&E DEFENSE-WIDE/**BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CO5

PROJECT

CO5

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
CBPS													
SBIR - Aggregated from SBIR	Allot	SBCCOM-Natick, MA	U	0	0	NONE	25	Oct-01			0	25	0
JCPE													
PM/MS S - Overall Program Management and IPT Oversight	WR	NSWCDD, Dahlgren, VA	U	192	200	Oct-00	200	Oct-01			0	592	792
PM/MS S - IPT Support	MIPR	Various	U	146	156	Dec-00	150	Dec-01			0	452	600
SCPE													
PM/MS S - Overall Program Management	WR	DPG, UT; PNAS, Patuxent, MD	U	220	100	Dec-00	100	Dec-01			0	420	520
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	55	Oct-00	0	NONE			0	55	55
Subtotal IV. Management Services:				558	511		475				0	1544	

Remarks:

TOTAL PROJECT COST:

3995

3232

4012

2200

13439

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CP5

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
CP5	COUNTERPROLIFERATION SUPPORT (EMD)	6784	0	0						

A. Mission Description and Budget Item Justification:

Project CP5 COUNTERPROLIFERATION SUPPORT (EMD): The Counterproliferation Support Program was funded in FY00 to complete the development of the Long Range Biological Stand-off Detection System (LR-BSDS) for Initial Operational Test and Evaluation (IOT&E) and to support type classification of the LR-BSDS prior to production. An Internal Program Review (IPR) was provided to Deputy Assistant to the Secretary of Defense for Chem-Bio Defense DATSD (CBD) to terminate the LR-BSDS program. The U.S. Army Chemical School no longer has a requirement for a LR-BSDS and recommended termination of the program. The Milestone Decision Authority (MDA) prepared an Acquisition Decision Memorandum on 15 May 00 directing an orderly shutdown of this program. The termination plan incorporates completion of two prototypes, completion of the Technical Data Package and Technical Manuals, and preparation of a final report. Program closed out.

FY 2000 Accomplishments:

- 742 LR-BSDS - Conducted an orderly shutdown.
- 1152 LR-BSDS - Completed two LR-BSDS prototypes.
- 451 LR-BSDS - Completed technical data package and technical manuals.
- 814 LR-BSDS - Contract termination costs include: canceled contracts; inventoried materials; transferred or returned Government Furnished Equipment (GFE) to the appropriate government agencies; and completed final report.
- 1689 LR-BSDS - Completed redesign to solve technical problems.
- 1936 LR-BSDS - Conducted successful engineering design testing.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) CP5

PROJECT

FY 2000 Accomplishments (Cont):

Total 6784

FY 2001 Planned Program: No planned program

FY 2002 Planned Program: No planned program

B. <u>Other Program Funding Summary:</u>										
	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
CP3 COUNTERPROLIFERATION SUPPORT (ADV TECH DEV)	10240	10245	12575							
CP4 COUNTERPROLIFERATION SUPPORT (DEMVAL)	16819	19839	15346							
JPO230 PORTAL SHIELD EQUIPMENT	4751	26315	3892							

C. Acquisition Strategy:

LR-BSDS

Program closed out 31 Dec 00.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CP5

D. Schedule Profile: N/A

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CP5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
LRBSDS													
HW C - Long Range-Biological Standoff Detection System (LR-BSDS)	PO	Schwartz Electro Optics, Orlando, FL	C	3136	0	NONE	0	NONE			0	3136	0
Subtotal I. Product Development:				3136	0		0				0	3136	

Remarks:

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
LRBSDS													
TD/D C - LR-BSDS Orderly Shutdown	PO	Schwartz Electro Optics, Orlando, FL	C	500	0	NONE	0	NONE			0	500	0
Subtotal II. Support Costs:				500	0		0				0	500	

Remarks:

Project CP5

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
June 2001

BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CP5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
LRBSDS													
OTHT C - LR-BSDS Engineering Design Testing	MIPR	PD Bio, Edgewood, MD	U	1442	0	NONE	0	NONE			0	1442	0
Subtotal III. Test and Evaluation:				1442	0		0				0	1442	

Remarks:

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
LRBSDS													
PM/MS C - Program Management	PO	PD Bio, Edgewood, MD		1948	0	NONE	0	NONE			0	1948	0
Subtotal IV. Management Services:				1948	0		0				0	1948	

Remarks:

Project CP5

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BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE	PROJECT
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	CP5

TOTAL PROJECT COST:

7026

0

0

0

7026

Project CP5

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
DE5

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
DE5	DECONTAMINATION SYSTEMS (EMD)	0	2580	2514						

A. Mission Description and Budget Item Justification:

Project DE5 DECONTAMINATION SYSTEMS (EMD): This project funds Engineering and Manufacturing Development (EMD) of decontamination equipment for the Joint Service Fixed Site Decontamination (JSFXD) Program aimed at developing a family of decontaminants and a family of applicators. The program will provide soldiers, sailors, marines, and airmen the equipment necessary to fully decontaminate their vital areas to sustain critical cargo flow into theater. The program has been divided into three blocks. Block I will field decontaminants that will be used with integral or existing applicators. Block II will field any additional applicators and containment systems required to provide the full fixed site decontamination capability (excluding Block III). Block III will provide the capability to decontaminate skin/casualties with open wounds.

FY 2000 Accomplishments: None**FY 2001 Planned Program:**

- 1619 JSFXD - Conduct MS B and initiate MS C program documentation for Block I. Prepare solicitation package and award EMD contract for Block II.
- 917 JSFXD - Initiate Block I Development Test (DT)/Operational Test (OT) on Block II.
- 44 SBIR

Total 2580

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
DE5

FY 2002 Planned Program:

- 1522 JSFXD - Complete DT/OT on family of decontaminants for Block I. Complete MS C documentation for Block I.
- 200 JSFXD - Incorporate lessons learned from OT into logistics support documentation for Block I family of decontaminants.
- 792 JSFXD - prepare documentation and test reports, conduct down select of medical/skin decontaminant in support of Block III EMD contract award.

Total 2514

B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
G47001 MODULAR DECON SYSTEM	7520	2429	5032							
JN0010 JOINT SERVICE FIXED SITE DECON (JSFXD)	0	0	1526							
JN0018 SORBENT DECON	0	2740	8638							
M67401 M17 LTWT DECON SYSTEM (LDS)	4612	0	0							

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/

BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) DE5

PROJECT

DE5

C. Acquisition Strategy: JSFXD Block I will competitively procure COTS/NDI decontaminants and where required, integral applicators for government/contractor testing with options for production. Block II will be a competitive contract to develop applicators and containment systems for government and contractor testing with options for production. Block III will be a competitive procurement of COTS/NDI decontaminants with potential to meet FDA requirements for government/contractor testing with options for production.





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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
DE5

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSFXD												
Block I - IV IPR					1Q	2Q						
Block I Milestone B							3Q					
Block I Developmental Test (DT)/Operational Test (OT)							3Q		1Q			
Block II Prototype Testing								4Q		3Q		
Block II Milestone B												4Q
Block III Tests for Down Select							3Q			3Q		
Block III Milestone C												4Q
Block I MS C											3Q	

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
DE5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
SW SB - EMD Contract for Block II	C/FFP	TBS	C	0	1219	Nov-00	0	NONE			0	1219	0
HW C - EMD Contract for Medical and Skin Decon	C/CPFF	TBS	C	0	0	NONE	0	NONE			0	0	0
Subtotal I. Product Development:				0	1219		0				0	1219	

Remarks:

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
ES S - Contract Support for EMD Phase	C/CPFF	MCSC, Quantico, VA	C	0	175	Jan-00	300	Feb-02			0	475	0
Subtotal II. Support Costs:				0	175		300				0	475	

Remarks:

Project DE5

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BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) DE5

PROJECT

DE5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
OTE SB - Block I Family of Decontaminants	MIPR	SBCCOM. Edgewood, MD	U	0	917	Feb-00	1614	Feb-01			0	2531	0
OTE S - DT/OT Family of Applicators	MIPR	SBCCOM, Edgewood, MD	U	0	0	NONE	0	NONE			0	0	0
OTHT S - FDA Testing of Skin Decon	MIPR	USAMMDA, Ft. Detrick, MD	U	0	0	NONE	0	NONE			2900	2900	0
Subtotal III. Test and Evaluation:				0	917		1614				2900	5431	

Remarks:

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) DE5

PROJECT

DE5

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JSFXD													
PM/MS S - Joint IPT Support	MIPR	Various	U	0	225	NONE	600	NONE			0	825	0
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	44	Oct-00	0	NONE			0	44	44
Subtotal IV. Management Services:				0	269		600				0	869	

Remarks:

TOTAL PROJECT COST:

0

2580

2514

2900

7994

Project DE5

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
IP5 INDIVIDUAL PROTECTION (EMD)	10328	7379	20850							

A. Mission Description and Budget Item Justification:

Project IP5 INDIVIDUAL PROTECTION (EMD): This project funds Engineering and Manufacturing Development (EMD) of individual protection equipment, such as the Joint Service Lightweight Integrated Suit Technology (JSLIST) ensemble, aimed at increasing individual protection levels while reducing physiological and logistical burdens. The goal is to provide equipment that allows the individual Soldier, Sailor, Airman, or Marine to operate in a contaminated Nuclear, Biological and Chemical (NBC) environment with little or no degradation of his/her performance. Funding is provided for: (1) design of Aircrew Eye-Respiratory Protection (AERP) systems modification kits for aircraft compatibility; (2) development of the Joint Service Aircrew Mask (JSAM), to replace multiple Service-specific aircrew chemical protective masks; (3) development of a JSLIST Block I glove upgrade to meet special operations forces and other Services hand protection requirements; (4) development of a JSLIST Block II glove upgrade to meet joint aircrew and ground hand protection requirements; (5) development of a Joint Protective Aircrew Ensemble (JPACE) to standardize aircrew ensembles across the services and reduce user fatigue; and (6) development of a Joint Service General Purpose Mask (JSGPM) to replace and improve upon the multiple masks currently used by U.S. ground forces.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001

BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

FY 2000 Accomplishments:

- 404 AERP - Continued B-2 aircraft non-recurring engineering design and development of drawing changes.
- 600 JPACE - Conducted Acquisition Strategy Review and obtained direction from the Milestone Decision Authority to proceed with Acquisition Strategy. Identified and documented performance specifications for system, materials, and components leveraging other complimentary programs such as JSLIST Pre-Planned Product Improvement (P3I).
- 827 JPACE - Completed baseline Developmental Testing (DT) I of current aviation systems to quantify requirements that were identified with respect to current systems (for example, impose less thermal burden than the current aircrew CB ensembles) for incorporation into the solicitation and to obtain information for development of pattern designs.
- 964 JPACE - Initiated development of patterns for use in fabrication of JPACE. Initiated system engineering and system logistics efforts to support JPACE development and production planning.
- 139 JSAM - Initiated Government test working group activities to include JPACE/JSGPM Program coordination, JSAM baseline testing of filter and Smartman, and preparing PDRR test matrix.
- 1013 JSAM - Obtained Milestone I decision approval; conducted source selection for development contracts.
- 3374 JSAM - Initiated development contracts and Cost As an Independent Variable activities.
- 300 JSLIST Block I Glove - Procured 1200 Gloves (total cost is \$40K) for prototype candidate materials for testing.
- 786 JSLIST Block I Glove - Prepared technical data input for materials and patterns production specifications.
- 1000 JSLIST Block I Glove - Conducted laboratory chemical/biological agent testing.
- 921 JSLIST Block I Glove - Conducted user wear test and developmental testing.

Total 10328

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT IP5**FY 2001 Planned Program:**

- 105 AERP - Continue B-2 Aircraft non-recurring engineering design and development of drawing changes.
- 2327 JPACE - Solicit a Request for Proposals to obtain 30 candidate materials for DT IIA. Initiate DT IIA material swatch testing to downselect to the best six candidates.
- 1288 JPACE - Continue development of patterns for use in fabrication of JPACE. Initiate development of program, logistics, and technical documentation to support the development and fielding of JPACE.
- 292 JSLIST Second Source - Conduct research and evaluation of second source material for JSLIST production.
- 600 JSLIST Second Source - Initiate screening and testing on selected second source materials candidates.
- 2230 JSLIST Second Source - Evaluate and test final selected material for second source for technology insertion to JSLIST.
- 412 JSLIST Block I Glove - Complete Operational Test (OT) and documentation for Milestone C.
- 125 SBIR

Total 7379

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) IP5

PROJECT

FY 2002 Planned Program:

- 82 AERP - Maintain configuration control on B-2 Aircraft modification design.
- 2204 JPACE - Complete DT IIA material swatch testing and downselect to best six candidate materials. Initiate DT IIB testing on the six candidates to verify system level performance requirements have been met.
- 504 JPACE - Fabricate 75 prototype ensembles of each of the six selected candidates for use in DT IIB (450 total at \$400 each).
- 1117 JPACE - Complete development of patterns for use in fabrication of JPACE. Continue developing and updating program, logistics, and technical documentation required to support the development and fielding of JPACE.
- 1890 JSAM - Conduct MS II and initiate EMD contract and begin logistics activities. The government test group activity will begin formulating DT/OT test plans .
- 10154 JSGPM - Conduct Engineering and Manufacturing Development. EMD includes system support packages for Production Qualification Testing and Initial Operational Testing and Evaluation. The contract includes delivery of 5,000 prototypes (\$500 each) in 1QFY04.
- 1720 JSGPM - Prepare program/project documentation to achieve Milestone III. Documentation includes: Acquisition Strategy (AS), the Manpower and Personnel Integration (MANPRINT) Plan, and performance specifications.
- 780 JSGPM - Execute Logistics Support Plan. This effort includes development of manuals and finalization of supportability plans.
- 890 JSGPM - Initiate the documentation and planning for Developmental and Operational Testing (DT/OT). Test redesigned prototypes to assess shortcomings exposed during Program Definition and Risk Reduction (PDRR) Phase.
- 1000 JSLIST Block II Glove - Initiate engineering and design of an integrated JSLIST Block II glove for DT/OT to meet air and ground usage requirements in a CB environment.

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) IP5

PROJECT

FY 2002 Planned Program (Cont):

- 509 JSLIST Block II Glove - Prepare program documentation for MS C.

Total 20850

B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
JA0002 JT SVC AVIATION MASK (JSAM)	0	0	0							
JN0011 AERP AIRCRAFT MODS	0	2745	2962							
JN0013 NAVY INDIVIDUAL PROTECTIVE GEAR	3369	5406	2328							
JN0015 JOINT PROTECTIVE AIRCREW ENSEMBLE	0	0	0							
M95801 PROTECTION ASSESSMENT TEST SYSTEM (PATS) M41	7254	0	0							
M99501 MASK, AIRCRAFT M45	3832	1000	457							
M99601 MASK, CHEM-BIOLOGICAL PROTECTIVE FIELD:M40/M40A1	13412	1492	143							

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BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

B. Other Program Funding Summary (Cont):

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
MA0400 PROTECTIVE CLOTHING	87192	100579	99220							
N00020 CB RESPIRATORY SYSTEM - AIRCREW	7297	3991	3924							

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) IP5

PROJECT

C. Acquisition Strategy:

AERP

Various methods will be utilized, to include both government project order and commercial contracts for contract development, fabrication of prototype test hardware, and maintenance of configuration control.

JSAM

The acquisition strategy for EMD is to select one contractor through Full and Open competition and include options for Production.

JPACE

Conduct Commerce Business Daily (CBD) material search for advanced material technologies addressing aviation material performance requirements from JPACE Joint Operational Requirements Document. Leverage JSLIST P3I advanced material testing and technologies to maximum extent possible. Competitive contract to develop materials/components and manufacture prototypes for developmental and operational testing and to produce full rate protection garments under contract options.

JSLIST Block I

Conduct market research and operation assessment of commercial CB protective glove to satisfy SOCOM requirement and the four services urgent requirement for an improved CB protective glove to replace the current butyl rubber glove.

JSLIST Block II

Conduct research, development and operational assessment of CB protective glove materials, concentrating on selectively permeable solutions to satisfy the current 45 day requirement in JSLIST, JPACE, and SOCOM ORD.

JSPGM

Combined full scale development (Program Definition & Risk Reduction (PDRR) and Engineering and Manufacturing Development (EMD)) and Production with contractor logistics support (CLS). The contract for development/production is based on a Joint Service performance specification with special emphasis on reducing weight, bulk, and breathing resistance by as much as 50 percent, and the lowest achievable total ownership cost.

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 BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

 PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
AERPMODS												
B-2 Develop Mod Design Proposal			3Q					4Q				
B-2 Modification Design and Development						2Q		4Q				
B-2 Configuration Maintenance of Design									1Q			4Q
JPACE												
Developmental Testing (DT I) on Existing Aviation Systems/Requirements Definition	1Q	2Q										
Direction to Execute Approved Acquisition Strategy				4Q								
Pattern Development				4Q								3Q
Release Solicitation				4Q								

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PROJECT

IP5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JPACE (Cont)												
Develop Prototypes for Developmental Testing - DT IIA					1Q	2Q						
Conduct Developmental Testing - DT IIA						2Q			1Q			
Milestone I/II								4Q				
Award System Test Quantity									2Q			
Fabricate Prototypes for Developmental Test - DT IIB-IID									2Q			4Q
Conduct Developmental Testing - DT IIB										3Q		4Q
JSAM												
Milestone I		2Q										
Engineering and Manufacturing Development (EMD) Contract Award (MS II)												4Q

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BA5 - Engineering and Manufacturing Dev**

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PROJECT

IP5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JSGPM												
Award Engineering and Manufacturing Development (EMD) Option									1Q			
PROT CLTH												
JSLIST Block I Glove Operational Test (OT)							3Q					
JSLIST Block I Glove Milestone IIIA								4Q				
JSLIST Block II Glove Prototype Build											3Q	

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
AERPMODS													
HW C - Engineering Modification Design of B-2 Aircraft to Support AERP Equipment	SS/FPI	OC-ALC, Tinker AFB OK	C	404	105	2Q FY01	82	2Q FY02			0	591	675
JPACE													
HW C - Prototype Pattern Design	MIPR	NCTRF/PMESS, Natick, MA	U	399	253	Dec-00	180	Dec-01			50	882	932
HW S - Prototype Procurement	C/CPFF	TBD	C	0	0	NONE	180	Mar-02			600	780	1320
JSAM													
HW S - Contractor Development	C/CPFF	TBD	C	3374	0	NONE	861	Nov-01			0	4235	0
JSGPM													
HW S - EMD by Contractor	C/CPIF	Avon, Inc., Cadillac, MI	C	0	0	NONE	9421	Dec-01			6000	15421	22738
PROT CLTH													
HW S - Prototype Procurement	MIPR	SBCCOM, Natick, MA	U	40	0	NONE	0	NONE			0	40	40
HW C - Technical Data and Patterns Specifications	MIPR	SBCCOM, Natick, MA	U	786	0	NONE	0	NONE			0	786	0
OTHT S - Material Candidate Testing	MIPR	MCSC, Quantico, VA	U	260	275	Nov-01	800	NONE			0	1335	0
Subtotal I. Product Development:				5263	633		11524				6650	24070	

Project IP5

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PE NUMBER AND TITLE

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PROJECT

I. Product Development- Cont

Remarks: JSAM - Initial development funded and executed under IP5 in FY00. Follow-on development for demonstration and validation funded under IP4 in FY01 and transition to engineering manufacturing development funded under IP4 in FY02.

JSGPM - FY02 award option on Engineering and Manufacturing Development contract. FY03 continues EMD. EMD includes delivery of 5,000 prototypes (\$500 each) in 1QFY04.

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
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IP5

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JPACE													
ES S - Systems Engineering	WR	NAWCAD, Patuxent River, MD	U	221	234	Nov-00	255	Nov-01			320	1030	1190
ILS S - Systems Logistics	WR	NAWCAD, Patuxent River, MD	U	96	104	Nov-00	105	Nov-01			150	455	540
TD/D S - Technical Report	C/CPFF	Various	C	0	180	Dec-00	104	Dec-01			34	318	352
ILS S - Logistics Support	C/CPFF	Various	C	344	52	Dec-00	150	Dec-01			350	896	1096
JSAM													
TD/D S - Technical Reports	C/CPFF	TBD	C	0	0	NONE	10	Nov-01			0	10	0
ES S - Systems Engineering	C/CPFF	TBD	C	0	0	NONE	101	Nov-01			0	101	0
JSGPM													
ES S - Engineering Support	PO	PM NBCDS, APG, MD	U	0	0	NONE	1073	1Q FY02			989	2062	2852
TD/D S - Tech Data and Documentation of JSGPM System	PO	PM NBCDS, APG, MD	U	0	0	NONE	500	1Q FY02			250	750	1000
ILS S - Logistics Support of JSGPM System	PO	PM NBCDS, APG, MD	U	0	0	NONE	700	1Q FY02			500	1200	1700
PROT CLTH													
ES S - Research and Evaluation of Second Source Material	MIPR	Various	U	0	255	Mar-01	0	NONE			0	255	0
ES S - Design Block II Glove	MIPR	Various		0	0	NONE	0	NONE			0	0	0
Subtotal II. Support Costs:				661	825		2998				2593	7077	

Project IP5

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DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/

BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

PROJECT

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II. Support Costs - Cont

Remarks:

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JPACE													
DTE S - Aircraft Integration Testing	WR	NAWCAD, Patuxent River, MD	U	53	0	NONE	65	Nov-01			300	418	1638
DTE S - Material Testing	WR	NCTRF, Natick, MA	U	35	0	NONE	281	Dec-01			300	616	766
DTE C - Material Testing	MIPR	PMESS, Natick, MA	U	162	30	Dec-00	179	Dec-01			30	401	496
DTE C - Chemical Testing	MIPR	USA DTC, Dugway, UT	U	200	792	Dec-00	395	Dec-01			450	1837	2359
DTE C - Prototype Testing	C/CPFF	Various	C	280	77	Dec-00	140	Dec-01			0	497	497
DTE S - Don/Doff Testing	WR	LANL, Los Alamos, NM	U	40	0	NONE	389	Dec-01			600	1029	1329
DTE S - Fit Testing	SS/CPFF	Anthrotech, Yellow Springs, OH	C	57	0	NONE	50	Dec-01			130	237	294
DTE C - Prototype Test Support	C/CPFF	Research Triangle Institute, Research Triangle, NC	C	0	0	NONE	0	NONE			380	380	760
DTE S - Chemical Tests	MIPR	USA DTC, Dugway, UT	U	0	0	NONE	232	Dec-01			740	972	1347
DTE S - Prototype Test	WR	NAWCAD, Patuxent River, MD	U	0	0	NONE	0	NONE			895	895	1498
OTHT S - JSSED - Block II Competitive Prototype Testing	C/CPFF	Battelle, Columbus, OH	C	0	960	Mar-01	150	Mar-02			450	1560	2082
JSAM													
DTE S - Govt Test Activities	Various	NAVAIR, MD & AFOTEC, NM	U	139	0	NONE	233	Jan-02			0	372	0

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RDT&E DEFENSE-WIDE/**BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) IP5

PROJECT

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III. Test and Evaluation - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
JSGPM													
DTE S - Developmental Testing of JSGPM System	PO	ATEC Falls Church VA, DTC; HRED, APG, MD	U	0	0	NONE	270	Dec-01			500	770	1250
OTE S - Operational Testing of JSGPM System	PO	OTC PAT/IOT&E various locations	U	0	0	NONE	570	Dec-01			4500	5070	8050
PROT CLTH													
DTE S - Dugway, UT Chemical Agent User Wear Test	MIPR	DPG, Dugway, UT	U	850	0	NONE	509	Nov-01			0	1359	0
OTE S - Block II Glove Test	MIPR	Various	U	685	0	NONE	0	NONE			0	685	0
OTHT S - Material Candidate Testing	MIPR	MCSC, Quantico, VA	U	0	450	Mar-01	0	NONE			0	450	0
OTE S - Final Testing of Selected Material	MIPR	Various		0	1802	May -01	0	NONE			0	1802	0
OTE S - Complete Testing for Block I Glove	MIPR	Various		0	312	NONE	0	NONE			0	312	0
Subtotal III. Test and Evaluation:				2501	4423		3463				9275	19662	

Remarks: JSAM - Responsible test organization is the Naval Air Warfare Center in Patuxent River, Maryland.
Operational test organization is AFOTEC.

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RDT&E DEFENSE-WIDE/**BA5 - Engineering and Manufacturing Dev**

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0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) IP5

PROJECT

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IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JPACE													
PM/MS S - Overall Program Coordination	WR	NAWCAD, Patuxent River, MD	U	186	389	Nov-00	328	Nov-01			200	1103	1428
PM/MS C - Fabrication Oversight and Chemical School Support	MIPR	Various	U	94	35	Dec-00	200	Dec-01			200	529	649
PM/MS S - Air Force, Army, Marine Corps Program Coordination	MIPR	Various	U	224	109	Dec-00	109	Dec-01			220	662	772
PM/MS C - Management Support	C/CPFF	Various	C	0	400	Dec-00	333	Dec-01			320	1053	1352
JSAM													
TD/D S - Conduct Program/Project Documentation	MIPR	Various	U	1013	0	NONE	685	Aug-02			0	1698	0
JSGPM													
PM/MS S - Program Management by Army (Lead Service)	PO	PM NBCDS, SBCCOM, APG, MD	U	0	0	NONE	410	1Q FY02			500	910	1400
PM/MS S - Program Management by Joint Services other than Army	PO	USN, USAF, USMC various locations	U	0	0	NONE	600	1Q FY02			650	1250	1900
PROT CLTH													
PM/MS C - Joint IPT Support	MIPR	MCSC, Quantico, VA	U	386	440	Feb-01	200	Nov-01			0	1026	0

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

IV. Management Services - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ZSBIR													
SBIR - Aggregated from SBIR	PO	HQ AMC, Alexandria, VA	U	0	125	Oct-00	0	NONE			0	125	125
Subtotal IV. Management Services:				1903	1498		2865				2090	8356	

Remarks:

TOTAL PROJECT COST:	10328	7379		20850				20608	59165	
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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MB5

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
MB5 MEDICAL BIOLOGICAL DEFENSE (EMD)	14945	21277	48818							

A. Mission Description and Budget Item Justification:

Project MB5 MEDICAL BIOLOGICAL DEFENSE (EMD): This project funds the Engineering and Manufacturing Development (EMD) (acquisition Phase II) of vaccines, drugs, and diagnostic medical devices that are directed against validated biological warfare (BW) agents to include bacteria, viruses, and toxins of biological origin. EMD efforts for medical biological defense product development involve production scale-up studies, consistency manufacturing, and expanded human safety studies. The results of these efforts, and those conducted during the Program Definition and Risk Reduction (PDRR) phase, will be used to submit a biologic license application to the Food and Drug Administration (FDA) for product licensure. Upon FDA licensure the product will transition to full-scale licensed production. Products to be developed under this program include: Recombinant Botulinum, Next Generation Anthrax, Plague, Smallpox, Tularemia, and Multivalent Equine Encephalitis vaccines.

Joint Biological Agent Identification and Diagnostic System (JBAIDS): This project will transition from a Defense Technology Objective (DTO). JBAIDS will identify and quantify biological organisms of operational concern and other pathogens of clinical significance for confirmatory and prognostic purposes. JBAIDS will provide U.S. operating forces with a reusable, portable, and modifiable biological organism identification and diagnostic device capable of simultaneous reliable identification of multiple biological organisms. The system will be configured to support deployed medical personnel with the ability to quickly and reliably identify specific biological organisms from clinical and environmental sources and samples. JBAIDS will be operated throughout the combat zone by medical laboratory personnel qualified by the DoD in compliance with the Clinical Laboratory Improvement Act.

FY 2000 Accomplishments:

- 5837 JVAP - Q-fever Vaccine - Initiated clinical assay development and validation for Q-fever vaccine.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT MB5**FY 2000 Accomplishments (Cont):**

- 3968 JVAP - Q-fever Vaccine - Initiated facility re-design for Q-fever vaccine.
- 1823 JVAP - Q-fever Vaccine - Initiated Investigational New Drug (IND) preparation for Q-fever vaccine.
- 3317 JVAP - Pentavalent Botulinum Toxoid - Continued clinical and booster studies of Pentavalent Botulinum Toxoid. Began serologies and data analysis of the booster study to validate surrogate marker concept.

Total 14945**FY 2001 Planned Program:**

- 4981 JVAP - Q-fever Vaccine - Continue assay validation and consistency lot production. Current Q-fever vaccine is not a viable product. Alternatives are being assessed to meet DoD requirements.
- 6304 JVAP - Smallpox Vaccine - Begin manufacture consistency lots and conduct stability testing for Smallpox vaccine. Initiate protocol preparation for Phase 2b clinical trial for Smallpox vaccine to satisfy FDA requirement for licensure.
- 2946 JVAP - Smallpox Vaccine (Vaccinia Immune Globulin-VIG component) - Manufacture consistency lots and revalidate Plaque Reduction Neutralization (PRN) assay for VIG. Initiate Biologics License Application (BLA) process.
- 2980 JVAP - Pentavalent Botulinum Toxoid - Continue serologies and data analysis of the Pentavalent Botulinum Toxoid booster study to validate surrogate marker concept.
- 3660 JVAP - Prime Systems Contract - Systems Integration, Earned Value Management System (EVMS), Integrated Digital Environment (IDE) initiatives, special studies (Investigation New Drug stockpile assessment), regulatory compliance and quality assurance.
- 406 SBIR

Total 21277

Project MB5

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Exhibit R-2 (PE 0604384BP)

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MB5

FY 2002 Planned Program:

- 6848 JBAIDS - Initiate design improvements of units transitioning from DTO and begin fabrication of Engineering Development Test (EDT) units. Conduct Engineering Development Test.
- 1061 JBAIDS - Initiate submission of Identification Assays to the Food and Drug Administration (FDA) for regulatory approval.
- 650 JBAIDS - Initiate Integrated Logistics Support (ILS) analysis development and technical drawings package requirements. Initiate development of technical manuals.
- 2000 JBAIDS - Design and produce four JBAIDS biological organism Identification Assays (transitioning from DTO).
- 2400 VP-GOCO - Establish Program Management Office for the Vaccine Production Facility. Release RFP and conduct source selection process.
- 20300 JVAP - Smallpox Vaccine - Continue consistency lot manufacture and conduct stability testing for Smallpox vaccine. Initiate Phase 2b clinical trial for Smallpox vaccine.
- 7884 JVAP - Smallpox Vaccine (VIG component) - Develop manufacturing capability for VIG and continue BLA process.
- 3778 JVAP - Pentavalent Botulinum Toxoid - Complete serologies and data analysis of the Pentavalent Botulinum Toxoid booster study and prepare final report for submission to the FDA.
- 3897 JVAP - Prime Systems Contract activities - Systems integration, EVMS, IDE initiatives, special studies, regulatory compliance, and quality assurance.

Total 48818

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MB5

B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
JX0005 DOD BIOLOGICAL VACCINE PROCUREMENT	66430	52876	56074							

C. Acquisition Strategy: JVAP: USD(A&T) ADM (dated 2 May 1995) for the Biological Defense program directs that "The Army shall use the prime contract approach in procuring the required vaccines."

JBAIDS: JBAIDS will transition from medical diagnostic DTO to the acquisition program in FY 2002 and continue advanced development and testing of JBAID EDT units. Additionally, this program will design and produce biological organism Identification Assays and reagents for use in JBAIDS. Technical data for both JBAIDS and its assays will be submitted to FDA for approval.



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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MB5


D. <u>Schedule Profile:</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
JBAID												
Block I Milestone I/II									1Q			
Block I Engineering, Manufacturing, and Development (EMD) Contract Award									1Q	2Q		
Design/Fabricate Engineering Design Test (EDT) Units									2Q		4Q	
Critical Design Review									3Q		4Q	
Conduct Engineering Design Test (EDT)											4Q	
Design/Construct Assays for Production Qualification Test (PQT)									2Q		4Q	
VACCINES												

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MB5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
VACCINES (Cont)												
Smallpox - Phase II Engineering and Manufacturing Development (EMD)						2Q						4Q

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
June 2001

BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MB5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBAID													
HW C - Design/fabricate EDT units	Various	TBD	U	0	0	NONE	4754	Jan-02			0	4754	0
HW SB - Design/fabricate Identification Assays	Various	TBD	U	0	0	NONE	2000	Jan-02			0	2000	0
HW SB - FDA Submission and Regulatory approval of Assays	Various	TBD	U	0	0	NONE	1000	Jan-02			0	1000	0
SW SB - Modify and Fabricate Test Systems	PO	TBD		0	0	NONE	0	NONE			0	0	0
HW SB - FDA Submission and Regulatory Approval of Equipment	Various	TBD	U	0	0	NONE	0	NONE			0	0	0
VACCINES													
HW S - Vaccine Development - Includes Consistency Lot, Pilot Lot, and Scale-up Production	SS/CPAF	DynPort Vaccine Company, Frederick, MD	C	3023	5773	Nov-00	9747	Nov-01			0	18543	0
Subtotal I. Product Development:				3023	5773		17501				0	26297	

Remarks: Biological Vaccines - Cost to Complete: "Continuing"

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT MB5

II. Support Costs	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBAID													
TD/D SB - Manual Development	Various	TBD	U	0	0	NONE	300	Jan-02			0	300	0
TD/D SB - LSA Development/Technical Drawing Package	Various	TBD	U	0	0	NONE	350	Jan-02			0	350	0
VACCINES													
TD/D S - Vaccine Development - Includes Process Definition, Environmental and FDA Documentation	SS/CPAF	DynPort Vaccine Company, Frederick, MD	C	1468	2805	Nov-00	4735	Nov-01			0	9008	0
Subtotal II. Support Costs:				1468	2805		5385				0	9658	

Remarks: Biological Vaccines - Cost to Complete: "Continuing"

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RDT&E DEFENSE-WIDE/**BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) MB5

PROJECT

MB5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBAID													
DTE C - Conduct EDT	Various	TBD	U	0	0	NONE	2005	Jan-02			0	2005	0
DTE C - PQT/IOT&E	Various	TBD	U	0	0	NONE	0	NONE			0	0	0
VACCINES													
OTHT SB - Vaccine Development - Includes Phase I/II Clinical and Non-clinical Trials, Tox Studies, Surrogate and Assay Testing	SS/CPAF	DynPort Vaccine Company, Frederick, MD	C	3541	4064	Nov-00	11419	Nov-01			0	19024	0
OTHT SB - Pentavalent Botulinum Toxoid - Booster Study	SS/CPFF	Battelle Memorial Inst., Columbus, OH	C	1343	770	Mar-01	576	Mar-02			0	2689	0
OTHT S - Vaccine Development - Includes Stability and Efficacy Testing	SS/CPAF	DynPort, LLC Reston, VA	C	605	1155	Nov-00	1950	Nov-01			0	3710	0
Subtotal III. Test and Evaluation:				5489	5989		15950				0	27428	

Remarks: Biological Vaccines - Cost to Complete: "Continuing"

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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) MB5

PROJECT

MB5

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
JBAID													
PM/MS S - Program Management and Program Manager Support	Various	Joint Program Office for Biological Defense, Falls Church, VA	U	0	0	NONE	150	1Q FY02			0	150	0
VAC PRD FA													
PM/MS S - Program Management and Program Manager Support	Allot	TBD	U	0	0	NONE	2400	NONE			0	2400	0
VACCINES													
PM/MS S - Vaccine Development	C/FP	Camber, Inc., Frederick, MD	C	1062	1462	Feb-01	1535	Feb-02			0	4059	0
PM/MS S - Vaccine Development - Joint Vaccine Acquisition Program - Program Management Office	Various	JVAP, Fort Detrick, MD	U	1513	1451	1Q FY01	1612	1Q FY02			0	4576	0
PM/MS S - Vaccine Development Support	C/FP	SAIC, Frederick, MD	C	330	375	1Q FY01	394	1Q FY02			0	1099	0
PM/MS S - Program Management and Program Manager Support	Various	Joint Program Office for Biological Defense, Falls Church, VA	U	1061	1983	Oct-00	2860	Oct-01			0	5904	0
PM/MS S - Contractor Program Management and System Engineering	Various	Camber Corporation, Falls Church, VA	C	1000	1033	Oct-00	1031	Oct-01			0	3064	0

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 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
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MB5

IV. Management Services - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date	FY2003 Cost	FY2003 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ZSBIR													
SBIR - Aggregated from SBIR	PO	HQ AMC, Alexandria, VA	U	0	406	Oct-00	0	NONE			0	406	406
Subtotal IV. Management Services:				4966	6710		9982				0	21658	

Remarks: Biological Vaccines - Cost to Complete: "Continuing"

TOTAL PROJECT COST:	14946	21277		48818				0	85041	
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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MC5

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
MC5	MEDICAL CHEMICAL DEFENSE (EMD)	724	1081	1472						

A. Mission Description and Budget Item Justification:

Project MC5 MEDICAL CHEMICAL DEFENSE (EMD): This project funds the development of medical materiel and other medical equipment items necessary to provide an effective capability for medical defense against chemical agent threats facing U.S. forces in the field. This project supports research efforts in the Engineering and Manufacturing Development (EMD) phases of the acquisition strategy for pretreatment therapeutic drugs, diagnostic equipment, and other life support equipment for protection against and management of chemical warfare agents. Project funds research and development of safety studies, manufacturing scale up, process validation, drug interaction, performance test and submission of FDA drug licensure application(s).

FY 2000 Accomplishments:

- 218 Multichambered Autoinjector - Continued a multi-year stability study and prepared a New Drug Application.
- 456 Pyridostigmine Bromide - Initiated four 2-year studies to validate surrogate markers for human efficacy. (Human ex vivo muscle study, human ex vivo blood study, nonhuman primate ex vivo study, and small animal ex vivo muscle study).
- 50 Skin Exposure Reduction Paste Against Chemical Warfare Agent (SERPACWA, formerly Topical Skin protectant, TSP) - Initiated and completed a user acceptability study.

Total 724

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BA5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MC5

FY 2001 Planned Program:

- 296 Pyridostigmine Bromide - Continue four 2-year studies to validate surrogate markers for human efficacy. (Human ex vivo muscle study, human ex vivo blood study, nonhuman primate ex vivo study, and small animal ex vivo muscle study) .
- 137 Pyridostigmine Bromide - Conduct storage and stability testing, and submit support documentation for FDA licensure.
- 212 Multichambered Autoinjector - Submit support documentation for FDA licensure and conduct a Milestone III in-process review.
- 418 SERPACWA - Prepare sample packaging and validate manufacturing procedure.
- 18 SBIR

Total 1081

FY 2002 Planned Program:

- 140 Pyridostigmine Bromide - Continue storage and stability testing.
- 820 Pyridostigmine Bromide - Conduct FDA required additional studies.
- 512 Multichambered Autoinjector - Conduct FDA required additional studies for licensure.

Total 1472

B. Other Program Funding Summary: N/A

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
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**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) MC5

PROJECT

MC5**C. Acquisition Strategy:**

Multi Autoinjector	In-house contractor development to FDA licensure, followed by single source procurement.
Pyrido Bromide	In-house development to FDA licensure, followed by single source procurement.
Adv Anticonvuls	In-house development to FDA licensure, followed by single source procurement.
SERPACWA	In-house development to FDA licensure, followed by single source procurement.

D. Schedule Profile:

	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
MEDCHEM												
Advanced Anticonvulsant - Milestone II											3Q	
Multichambered Autoinjector - Milestone III								4Q				
Multichambered Autoinjector - Conduct Additional FDA Studies									1Q			4Q
Multichambered Autoinjector - Stability Study	1Q											4Q
SERPACWA - Milestone III				4Q								

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DATE
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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MC5

D. <u>Schedule Profile (cont):</u>	FY 2000				FY 2001				FY 2002			
	1	2	3	4	1	2	3	4	1	2	3	4
MEDCHEM (Cont)												
Pyridostigmine Bromide - Validate Surrogate Markers	1Q									2Q		
Pyridostigmine Bromide - Stability Study	1Q											4Q

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE

0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) MC5

PROJECT

MC5

I. Product Development	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
MEDCHEM													
HW S - New Drug Application for Multichambered Autoinjector	C/CPFF	Meridian Medical Technologies, Columbia, MD	C	165	0	NONE	0	NONE			0	165	125
HW S - Support Documentation for FDA Licensure of Pyridostigmine Bromide	C/CPFF	EER Inc, Chantilly, VA	C	0	99	1Q FY01	0	NONE			0	99	0
HW S - Sample Packaging and Manufacturing Validation of SERPACWA	C/CPFF	McKesson BioServices, Rockville, MD	C	0	419	1Q FY01	0	NONE			0	419	0
HW S - Support Documentation for FDA Licensure of Multichambered Autoinjector	PO	EER, Inc, Chantilly, VA		0	162	1Q FY01	0	NONE			0	162	0
HW S - MS III IPR for Multichambered Autoinjector	PO	Cambridge Consulting Corp, Reston, VA		0	50	1Q FY01	0	NONE			0	50	0
Subtotal I. Product Development:				165	730		0				0	895	

Remarks:

II. Support Costs: Not applicable

Project MC5

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MC5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
MEDCHEM													
DTE S - Stability Study for Multichambered Autoinjector	C/CPFF	Meridian Medical Technologies, Columbia, MD	C	53	0	NONE	0	NONE			0	53	98
DTE S - Surrogate validation of Pyridostigmine Bromide	Allot	Walter Reed Army Institute of Research, Silver Spring, MD	U	456	0	NONE	0	NONE			0	456	400
OTE S - User Acceptability Study for SERPACWA	MIPR	AMEDD Center and School, Ft Sam Houston, San Antonio, TX	U	50	0	NONE	0	NONE			0	50	40
DTE S - Pyridostigmine Bromide - Surrogate Validation	Allot	USA Medical Research Institute of Chemical Defense, Edgewood, MD	U	0	295	1Q FY01	820	NONE			0	1115	0
DTE S - FDA Required Studies for Multichambered Autoinjector	C/CPFF	Meridian Medical Technologies, Columbia, MD	C	0	0	NONE	512	1Q FY02			0	512	0
DTE S - Bioequivalence Study for Advanced Anticonvulsant	C/CPFF	TBD	C	0	0	NONE	0	NONE			0	0	0
DTE S - Stability Test for Pyridostigmine Bromide	C/CPFF	Stanford Research International, Palo Alto, CA	C	0	38	1Q FY01	140	1Q FY02			0	178	0

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CBDP PROJECT COST ANALYSIS (R-3 Exhibit)

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**RDT&E DEFENSE-WIDE/
 BA5 - Engineering and Manufacturing Dev**

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MC5

III. Test and Evaluation - Cont.	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Subtotal III. Test and Evaluation:				559	333		1472				0	2364	

Remarks:

IV. Management Services	Contract Method & Type	Performing Activity & Location	US NF CC	Total PYs Cost	FY2001 Cost	FY2001 Award Date	FY2002 Cost	FY2002 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ZSBIR													
SBIR - Aggregated from SBIR	Various	HQ AMC, Alexandria, VA	U	0	18	Oct-00	0	NONE			0	18	18
Subtotal IV. Management Services:				0	18		0				0	18	

Remarks:

TOTAL PROJECT COST:				724	1081		1472				0	3277	
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Project MC5

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support**

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Budget Activity (BA) Cost	31725	23686	31276							
0605384BP CHEMICAL/BIOLOGICAL DEFENSE (MANAGEMENT SUPPORT)	25787	23686	31276							
0605502BP SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)	5938	0	0							

A. Mission Description and Budget Activity Justification: This program element provides research, development, testing and evaluation management support to the Department of Defense NBC defense program.

This effort includes support to Department of Defense (DoD) response to Chemical/Biological (CB) terrorism, funds joint doctrine and training support, funds sustainment of a technical test capability at Dugway Proving Ground, and financial/program management and support program. Additionally, this program element funds the Joint Point Test program (049), which provides a response to Commander in Chief (CINCs) and Service issues for fielded capability.

Anti-terrorism funding provides DoD with a process and means to conduct assessments of installation vulnerabilities to Chemical/Biological threats.

Joint Training and Doctrine Support funds development of Joint Doctrine and Tactics, Techniques, and Procedures for developing Chemical Biological defense systems. The Training and Doctrine efforts also fund chemical and biological modeling and simulation to support the warfighter.

Dugway Proving Ground, a Major Range and Test Facility Base (MRTFB), funding provides for Chemical Biological Defense testing of DoD material, equipment and systems from concept through production. It finances indirect test operating costs not billable to test customers, including indirect civilian and contractor labor; repair and maintenance of test instrumentation, equipment, and facilities; and replacement of test equipment.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support**

The management support program provides management support for the Department of Defense (DoD) Nuclear, Biological and Chemical (NBC) defense program to allow program overview and integration of overall medical and non-medical programs by the Director, Defense Research and Engineering (DDR&E), through the Office of the Secretary of Defense (OSD) office of Deputy Assistant to the Secretary of Defense for Chemical/Biological Defense (DATSD (CBD)), execution management by the Defense Threat Reduction Agency (DTRA), integration of Joint requirements, management of training and doctrine by the Joint Service Integration Group (JSIG), Joint Research, Development and Acquisition (RDA) planning, input to annual report to Congress and Program Objective Memorandum (POM) Strategy development by the Joint Service Materiel Group (JSMG), review of the JSIG and JSMG joint plans and the consolidated NBC Defense POM Strategy by the Joint NBC Defense Board (JNBCDB) Secretariat.

The Joint Point Test program (O49) provides funds to plan, conduct, evaluate, and report on joint tests (for other than developmental hardware) and accomplish operational research assessments in response to requirements received from the Services and the Commanders in Chief (CINCs) for already fielded equipment and systems.

Note: In November 1997, DoD published the Defense Reform Initiative (DRI), which directed the elimination of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ASTD (NCB)) and the creation of a new defense agency, DTRA. As a result of the DRI, the OSD oversight functions for the CB Defense Program were transferred to the office of the DATSD (CBD) under the DDR&E, while DoD execution management of the program was transferred to DTRA. Effective FY99, the financial management responsibilities for the Chemical/Biological (CB) Defense Program were transferred from the Ballistic Missile Defense Organization (BMDO) to DTRA.

This Budget Activity also funds the Small Business Innovative Research (SBIR) and the Small Business Technology Transfer (STTR) program. The overall objective of the Chemical/Biological Defense (CBD) SBIR program is to improve the transition or transfer of innovative CBD technologies between Department of Defense (DoD) components and the private sector for mutual benefit. The CBD program includes those technology efforts that maximize a strong defensive posture in a biological or chemical environment using passive and active means as deterrents. These technologies include chemical and biological detection; information assessment, which includes identification, modeling, and intelligence; contamination avoidance; and protection of both individual soldiers and equipment.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE (MANAGEMENT
SUPPORT)

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Program Element (PE) Cost	25787	23686	31276							
AT6 ANTI-TERRORISM	457	454	460							
DT6 JOINT DOCTRINE AND TRAINING SUPPORT	3240	3202	3301							
DW6 DUGWAY PROVING GROUND	9767	10027	15424							
MS6 MANAGEMENT SUPPORT	10783	8486	9083							
O49 JOINT POINT TEST	1540	1517	3008							

A. Mission Description and Budget Item Justification: This program element provides research, development, testing and evaluation management support to the Department of Defense NBC defense program.

This effort includes support to Department of Defense (DoD) response to Chemical/Biological (CB) terrorism, funds joint doctrine and training support, funds sustainment of a technical test capability at Dugway Proving Ground, and financial/program management and support program. Additionally, this program element funds the Joint Point Test program (049), which provides a response to Commander in Chief (CINCs) and Service issues with currently fielded equipment.

Anti-terrorism funding provides DoD with a process and means to conduct assessments of installation vulnerabilities to Chemical/Biological threats.

Joint Training and Doctrine Support funds development of Joint Doctrine and Tactics, Techniques, and Procedures for developing Chemical Biological defense systems. The Training and Doctrine efforts also fund chemical and biological modeling and simulation to support the warfighter.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE (MANAGEMENT
SUPPORT)**

Dugway Proving Ground, a Major Range and Test Facility Base (MRTFB), funding provides for Chemical Biological Defense testing of DoD material, equipment and systems from concept through production. It finances indirect test operating costs not billable to test customers, including indirect civilian and contractor labor; repair and maintenance of test instrumentation, equipment, and facilities; and replacement of test equipment.

The management support program provides management support for the (DoD) Nuclear, Biological and Chemical (NBC) defense program to allow program overview and integration of overall medical and non-medical programs by the Director, Defense Research and Engineering (DDR&E), through the Office of the Secretary of Defense (OSD) office of Deputy Assistant to the Secretary of Defense for Chemical/Biological Defense (DATSD (CBD)), execution management by the Defense Threat Reduction Agency (DTRA), integration of Joint requirements, management of training and doctrine by the Joint Service Integration Group (JSIG), Joint Research, Development and Acquisition (RDA) planning, input to annual report to Congress and Program Objective Memorandum (POM) Strategy development by the Joint Service Materiel Group (JSMG), review of the JSIG and JSM G joint plans and the consolidated NBC Defense POM Strategy by the Joint NBC Defense Board (JNBCDB) Secretariat.

The Joint Point Test program (O49) provides funds to plan, conduct, evaluate, and report on joint tests (for other than developmental hardware) and accomplish operational research assessments in response to requirements received from the Services and the Commanders in Chief (CINCs) for already fielded equipment and systems.

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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE (MANAGEMENT
SUPPORT)

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	24553	23907	24515	
Appropriated Value	24043	23907	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	-168	0	
b. SBIR/STTR	-356	0	0	
c. Omnibus or Other Above Threshold Reductions	-50	0	0	
d. Below Threshold Reprogramming	2218	0	0	
e. Rescissions	-68	-53	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	6761	
FY2002/2003 President's Budget	25787	23686	31276	

Change Summary Explanation:**Funding:**

FY02 - Enhancements to Dugway Proving Ground for testing modernization (DW6 \$4,951K); enhancements to Joint and CINC user testing (O49, \$1,320K); increases to JSMG Management for additional mission (MS6 \$338K); for higher priority efforts (-\$30K). Increase for inflation assumptions (\$182K).

Schedule:**Technical:**

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)PROJECT
AT6

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
AT6 ANTI-TERRORISM	457	454	460						

A. Mission Description and Budget Item Justification:

Project AT6 ANTI-TERRORISM: The growing threat of the use of chemical/biological (CB) agents in acts of terrorism places DoD installations and personnel at a higher risk. With that in mind, this budget item provides DoD with the means to address the threat of CB terrorism to DoD installations and personnel. It attempts to address the requirements identified in PDD 39 and PDD 62. Funding was originally added in response to DoD Directive 2000.12, "DoD Combating Terrorism Program," dated September 15, 1996 (updated April 13, 1999) and the Downing Task Force Report, "Global Interests/Global Responsibilities," dated September 16, 1996. Funding provides for the development of combating CB terrorism planning, training, and exercise technologies; and the sustainment of those technologies in the out years, as appropriate. Sponsors of projects funded under this budget item would include DTRA, J-34, ASD (SO/LIC), SBCCOM, USA CMLS, the Technical Support Working Group, and other organizations involved with combating CB terrorism.

FY 2000 Accomplishments:

- 160 Sustained anti-terrorism training base.
- 152 Planned and assessed a table top exercise and developed a new scenario exercise.
- 145 Prepared an annual update to the Weapons of Mass Destruction (WMD) CD-ROM training program.

Total 457**FY 2001 Planned Program:**

- 259 Develop and Conduct WMD Installation Emergency Responder, Pilot Training Course.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**PROJECT
AT6**FY 2001 Planned Program (Cont):**

- 187 Conduct Front End Analysis of Consequence Management RDA requirements.
- 8 SBIR

Total 454**FY 2002 Planned Program:**

- 460 Sustain combating CB terrorism technology development.

Total 460

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)PROJECT
AT6B. Other Program Funding Summary:

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>							
DT6 JOINT DOCTRINE AND TRAINING SUPPORT	3240	3202	3301							
DW6 DUGWAY PROVING GROUND	9767	10027	15424							
MS6 MANAGEMENT SUPPORT	10783	8486	9083							
O49 JOINT POINT TEST	1540	1517	3008							
SB6 SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)	5938	0	0							

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**PROJECT
DT6

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
DT6	JOINT DOCTRINE AND TRAINING SUPPORT	3240	3202	3301						

A. Mission Description and Budget Item Justification:

Project DT6 JOINT DOCTRINE AND TRAINING SUPPORT: The activities of this project directly support the Joint Service Chemical/Biological (CB) Defense Program in particular the Joint Service Integration Group (JSIG), Doctrine and Training (DT), and Modeling, Simulation, and Analysis (MSA). This effort funds (1) preparation of medical and non-medical Joint Doctrine and Tactics, Techniques, and Procedures (TTP) for developing CB Defense Systems; (2) development of joint medical, non-medical and MSA requirements; (3) the US Army Chemical School (USACMLS) Joint Senior Leaders' Course (JSLC); (4) assistance in correcting training and doctrine deficiencies covered in General Accounting Office (GAO) Reports; (5) contract support to create a database of current and planned NBC Defense studies, analysis, models and simulations, training, exercises, and wargames; to determine overlaps, duplication, and shortfalls; and to build and execute programs to correct shortfalls in all aspects of NBC Defense.

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DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)

PROJECT

DT6

FY 2000 Accomplishments:

- 1623 JSIG DT - Supported development of medical, non-medical and special operations Multi-Service core NBC doctrine; (1) FM 3-11.3 Contamination Avoidance; (2) FM 3-11.21 NBC Aspects of Consequence Management; (3) FM 3-11 NBC Operations; FM 3-11.34 Multi-service Tactics, Techniques, and Procedures (MTTP) for NBC Defense of Fixed Sites, Ports, and Airfields; (4) FM 31-18 - MTTP for Special Operations Forces (SOF) Nuclear, Biological, and Chemical (NBC) Defense Operations; (5) FM 8-283 Treatment of Nuclear Warfare Casualties and Low Level Radiation Exposures. Drafted/reviewed joint requirement documents; (1) Joint Warning and Reporting Network Milestone (MS) III; (2) Joint Service Light NBC Reconnaissance System MSIII; (3) Joint Chemical Agent Detector MS III; (4) Joint Biological Point Detection System (Block I) MS III; (5) Joint Biological Standoff Detection System MS I; (6) Biological Capstone Requirements Document (Draft); (7) Joint Modular Chemical, Biological Detector (Draft); (8) Joint Service Lightweight Suit Technology (Change 2) MS III; (9) Joint Chemical Environment Survivability Mask MS I; (10) Joint Transportable Collective Protection System MS I; (11) Joint Service Fixed Site Decontamination MSII; (12) Joint Biological Agent Identification and Diagnostic System (Draft). Initiated assessment of Smallpox vaccine stockpile requirements. Initiated Chemical Contamination Avoidance Mission Area Analysis. Initiated implementation of recommendations provided in the NBC Defense Doctrine and Training Assessment. Provided Service support to implement training review and enhancement initiatives.
- 422 JSIG DT - Initiated NBC system requirements analysis; (1) Joint Service Lightweight NBC Reconnaissance System; (2) Joint Warning & Reporting Network; (3) Joint Service Sensitive Equipment Decontamination; (4) Joint Chemical/Biological Agent Water Monitor.
- 50 JSIG DT - Supported additional joint participation in the Joint Senior Leader's Course (JSLC).
- 1145 JSIG MODSIM - Supported the Services modeling and simulation (M&S) and analysis requirements by establishing the Modeling and Simulation Requirements Panel (MSRP). The MSRP initiated development of the M&S Joint Future Operational Capabilities (JFOC), Draft Master Plan, Draft MNS and ORD/CRD, M&S Common Data Model (CDM).

Total 3240

Project DT6

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

DT6**FY 2001 Planned Program:**

- 1513 JSIG DT - Continue to support the development of medical, non-medical and special operations Multi-Service core NBC doctrine; (1) FM 3-11.4 NBC Protection Multi-service Tactics, Techniques, and Procedures (MTTP); (2) FM 3-11.9 Technical Aspects of Chemical and Biological Warfare Agents; FM 8-285 Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries. Draft/review joint requirements documents; (1) Joint Biological Standoff Detection System Milestone (MS) II; (2) Joint Service Air Crew Mask MS II; (3) Joint Service General Purpose Mask MS II; (4) Joint Service Mask Leakage Tester MS II; (5) Joint Transportable Collective Protection System MS II; (6) Safeguard (Draft); (7) Joint Biological Tactical Detection System (Draft); (8) Joint Grounds Effects Model (Draft); (9) Joint Multi-mission Advanced NBC Sensor (Draft); (10) ARTEMIS (Draft); (11) Joint Biological Agent Identification and Diagnostic System MS I; (12) Smallpox MS II; (13) Plague Tularemia (Draft); (14) Joint Medical NBC Decision Support Tool (Draft); (15) Next Generation Anthrax (Draft). Complete assessment of smallpox vaccine stockpile. Initiate assessment of Plague and Anthrax stockpile requirements. Conduct medical risk assessment. Complete Chemical Contamination Avoidance Mission Area Analysis. Initiate Battle Management and Biological Contamination Avoidance Mission Area Analysis. Continue implementation of recommendations provided in the NBC Defense Doctrine and Training Assessment. Provide Service support to implement training review and enhancement initiatives.
- 450 JSIG DT - Continue NBC system requirements analysis; (1) Joint Chemical Agent Detector; (2) Joint Biological Standoff Detection System; (3) Joint Service Fixed Site Decontamination System; (4) Joint Service Lightweight Standoff Chemical Agent Detector.
- 50 JSIG DT - Continue to support additional joint participation in the JSLC.

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
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BUDGET ACTIVITY

RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)

PROJECT

DT6

FY 2001 Planned Program (Cont):

- 1135 JSIG MODSIM - Continue to support Services M&S requirements through development of requirements documentation and the integration of M&S data model requirements. Finalize and publish M&S Master Plan, MNS, ORD/CRD. Initiate requirements validation through joint experiments and exercise/war games participation. Develop CDM framework, methodology, and quality assurance criteria to standardize CBD data used for joint acquisition, training, and mission planning and rehearsal, using modeling and simulation. Begin development of Common Model Mission Space (CMMS) to characterize the effects and behaviors on operations and personnel.
- 54 SBIR

Total 3202

FY 2002 Planned Program:

- 1751 JSIG DT - Continue to support the development of medical, non-medical and special operations Multi-Service core NBC doctrine; (1) FM 3-11.14 NBC Vulnerability Analysis; (2) FM 3-11.19 MTTP for NBC Reconnaissance and Surveillance; FM 8-284 Treatment of Biological Warfare Agent Casualties. Draft/review joint requirements documents; (1) Joint Biological Standoff Detection System Milestone (MS) III; (2) Joint Protective Air Crew Ensemble MS III; (3) Joint Service Fixed Site Decontamination MS III; (4) Joint Chemical & Biological Agent Water Monitor MS II; (5) Joint Biological Point Detection System (Block 2) MS III; (6) Joint Chemical Environment Survivability Mask MS II; (7) Joint Container Refill System MS II; (8) Automatic Casualty Decontamination System (Draft); (9) Visible Casualty Agent Detection System (Draft). Initiate Collective and Individual Protection Mission Area Analysis. Continue implementation of recommendations provided in the NBC Defense Doctrine and Training Assessment. Provide Service support to implement training review and enhancement initiatives.
- 475 JSIG DT - Continue system requirements analysis; (1) Joint Chemical Agent Monitor; (2) Protective Clothing (JSLIST/FEE/EOD); (3) Joint Protective Air Crew Ensemble.

Project DT6

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

DT6**FY 2002 Planned Program (Cont):**

- 75 JSIG DT - Continue to support additional joint participation in the JSLC.
- 1000 JSIG DT - Support Services M&S requirements. Finalize data base tools and integrate CMMS characterizations of the battlespace to ensure a common operational picture. Populate the common data model with existing data and develop missing data. Continue to validate requirements through participation of joint experiments and exercise/war game participation. Verify and document modeling and simulation requirements and tools into C4I systems to optimize Joint CBD operational capability.

Total 3301**B. Other Program Funding Summary:** N/A

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**PROJECT
DW6

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
DW6 DUGWAY PROVING GROUND	9767	10027	15424							

A. Mission Description and Budget Item Justification:

Project DW6 DUGWAY PROVING GROUND: Project provides a technical capability for testing Department of Defense (DoD) Chemical and Biological Defense materiel, equipment, and systems from concept through production. It finances indirect test operating costs not billable to test customers, to include indirect civilian and contractor labor; repair and maintenance of test instrumentation, equipment, and facilities; and replacement of test equipment.

DPG, a Major Range and Test Facility Base (MRTFB), is the reliance center for all DoD chemical/biological defense (CBD) testing and provides the United States' only combined range, chamber, toxic chemical lab, and bio-safety level three facility.

DPG uses state-of-the-art chemical and life sciences test facilities and test chambers to perform CBD testing of protective gear, decontamination systems, detectors, and equipment while totally containing chemical agents and biological pathogens.

Projects programmed for testing at DPG include: Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD), Joint Biological Point Detection System (JBPDs), Joint Chemical Agent Detector (JCAD), Joint Service Lightweight Integrated Suit Technology (JSLIST), Joint Service Sensitive Equipment Decontamination (JSSED), Joint Service Fixed Site Decon (JSFXD), and NBC Reconnaissance System (NBCRS).

FY 2000 Accomplishments:

- 6896 Provided for civilian labor and other supporting costs that cannot be directly identified to a specific test customer. These civilian personnel perform administration and staff support for DPG's Chemical/Biological (CB) test mission to include budget, surety operations, range control, COR duties, and environmental oversight.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

DW6**FY 2000 Accomplishments (Cont):**

- 2318 Provided for labor and supporting costs of contractor personnel performing administration and management of DPG's CB test mission contracts. This is the indirect portion of the total cost of providing contractual effort including chemical analysis, field support, planning, and report documentation. This portion of the contract cannot be specifically identified to a test customer and is funded by indirect funds; the balance which can be directly identified is recouped from customers.
- 553 Provided for a dedicated and specially trained staff to operate and maintain all control systems within DPG's TRIAD Test Complex (Materiel Test Facility, Combined Chemical Test Facility and the Life Science Test Facility).

Total 9767**FY 2001 Planned Program:**

- 6176 Provides for civilian labor and other supporting costs that cannot be directly identified to a specific test customer. These civilian personnel perform administration and staff support for DPG's Chemical/Biological (CB) test mission to include budget, surety operations, range control, COR duties, and environmental oversight.
- 3110 Provides for labor and supporting costs of contractor personnel performing administration and management of DPG's CB test mission contracts. This is the indirect portion of the total cost of providing contractual effort including chemical analysis, field support, planning, and report documentation. This portion of the contract cannot be specifically identified to a test customer and is funded by indirect funds; the balance which can be directly identified is recouped from customers.
- 571 Provides for a dedicated and specially trained staff to operate and maintain all control systems within DPG's TRIAD Test Complex (Materiel Test Facility, Combined Chemical Test Facility and the Life Science Test Facility).
- 170 SBIR

Total 10027

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

DW6**FY 2002 Planned Program:**

- 6420 Provides for civilian labor and other supporting costs that cannot be directly identified to a specific test customer. These civilian personnel perform administration and staff support for DPG's Chemical/Biological (CB) test mission to include budget, surety operations, range control, COR duties, and environmental oversight.
- 3455 Provides for labor and supporting costs of contractor personnel performing administration and management of DPG's CB test mission contracts. This is the indirect portion of the total cost of providing contractual effort including chemical analysis, field support, planning, and report documentation. This portion of the contract cannot be specifically identified to a test customer and is funded by indirect funds; the balance which can be directly identified is recouped from customers.
- 598 Provides for a dedicated and specially trained staff to operate and maintain all control systems within DPG's TRIAD Test Complex (Materiel Test Facility, Combined Chemical Test Facility and the Life Science Test Facility).
- 4951 Provides for revitalization/modernization efforts at DPG commensurate with technology/facility requirements for future testing. This includes evolving capability needs driven by change in threat and system requirements and equipment purchases to upgrade/replace aging equipment.

Total 15424**B. Other Program Funding Summary: N/A**

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DATE
June 2001BUDGET ACTIVITY
**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**PROJECT
MS6

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
MS6 MANAGEMENT SUPPORT	10783	8486	9083							

A. Mission Description and Budget Item Justification:

Project MS6 MANAGEMENT SUPPORT: This project provides management support for the Department of Defense (DoD) Joint Service Nuclear, Biological and Chemical (NBC) defense program. It includes program oversight and integration of overall medical and non-medical programs by the Office of the Secretary of Defense (OSD) NBC Defense Steering Committee, which is composed of the Director, Defense Research and Engineering (DDR&E); the Director, Defense Threat Reduction Agency (DTRA); the Director, Chemical/Biological Defense Directorate, DTRA; and the Deputy Assistant to the Secretary of Defense for Chemical/Biological Defense (DATSD (CBD)); funds execution management by DTRA; integration of joint requirements, training and doctrine by the Joint Service Integration Group (JSIG); Joint Research Development Acquisition (RDA) planning, input to the NBC Defense Annual Report to Congress and Program Objectives Memorandum (POM) Strategy development by the Joint Service Materiel Group (JSMG); and review of the JSIG and JSMG joint plans and the consolidated NBC Defense POM Strategy by the Joint NBC Defense Board (JNBCDB) Secretariat. It also includes programming support for the Joint Service Chemical Biological Information System (JSCBIS) which serves as a budgetary and informational database for the DoD Chemical/Biological Defense Program. Funding is also provided for the Chemical Biological Archive Information Management System (CBAIMS) a means to collect, assemble, catalog and archive Chemical and Biological Defense information from multiple service locations into a central repository and library.

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

MS6**FY 2000 Accomplishments:**

- 488 CBAIMS - Supported archiving of Chemical and Biological information.
- 117 JNBCDB MGT - Provided Joint Nuclear, Biological and Chemical Defense Board (JNBCDB) oversight and analysis for Planning, Programming, Budget and Execution System (PPBES) process.
- 2692 JSIG MGT - Developed Joint Requirements and conducted milestone reviews. Developed medical Joint Future Operational Capabilities (JFOC) and integrated with updated non-medical JFOCs. Established Joint Training Working Group and Models and Simulations Requirements Panel to develop non-material requirements. Conducted annual review and update of Joint Modernization Plan, the integrated medical and non-medical Joint Priority List, the JFOCs and the Annual Report to Congress.
- 3003 JSMG MGT - Developed assessments to support RDA Planning. Provided analytic programmatic support for development of POM Strategy, the Budget Estimate Submit (BES), and the President's Budget (PB) submissions. Responded to specialized evaluation studies throughout the PPBS process.
- 4483 OSD MGT - Performed program reviews/assessments, provide programmatic PPBS oversight/analysis, provide congressional issue analysis and support. Supported financial management services provided by the Defense Threat Reduction Agency such as funding distribution and execution reporting. Provided Joint Service Chemical and Biological Information System (JSCBIS) database support.

Total 10783

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

MS6**FY 2001 Planned Program:**

- 387 CBAIMS - Archive Chemical and Biological information from multiple service locations.
- 186 JNBCDB MGT - Provide Joint Nuclear, Biological and Chemical Defense Board (JNBCDB) oversight and analysis for PPBS process.
- 2526 JSIG MGT - Develop Joint Requirements and conduct milestone reviews. Conduct annual review and update of Joint Modernization Plan, the integrated medical and non-medical Joint Priority List, the JFOCs and the Annual Report to Congress.
- 3006 JSMG MGT - Develop assessments to support Research, Development and Acquisition (RDA) Planning. Provide analytic programmatic support for development of Program Objective Memorandum (POM) Strategy, the Budget Estimate Submit (BES), and the President's Budget (PB) submissions. Respond to specialized evaluation studies throughout the PPBS process.
- 2242 OSD MGT - Perform program reviews/assessments, provide programmatic PPBS oversight/analysis, provide congressional issue analysis and support. Supports financial management services provided by the Defense Threat Reduction Agency such as funding distribution and execution reporting. Provide JSCBIS database support.
- 139 SBIR

Total 8486

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

MS6**FY 2002 Planned Program:**

- 754 CBAIMS - Archive Chemical and Biological information from multiple service locations.
- 191 JNBCDB MGT - Provide Joint Nuclear, Biological and Chemical Defense Board (JNBCDB) oversight and analysis for PPBS process.
- 2677 JSIG MGT - Develop Joint Requirements and conduct milestone reviews. Conduct annual review and update of Joint Modernization Plan, the integrated medical and non-medical Joint Priority List, the JFOCs and the Annual Report to Congress.
- 3574 JSMG MGT - Develop assessments to support RDA Planning. Provide analytic programmatic support for development of POM Strategy, the Budget Estimate Submit (BES), and the President's Budget (PB) submissions. Respond to specialized evaluation studies throughout the PPBS process.
- 1887 OSD MGT - Perform program reviews/assessments, provide programmatic PPBS oversight/analysis, provide congressional issue analysis and support. Supports financial management services provided by the Defense Threat Reduction Agency such as funding distribution and execution reporting. Provide JSCBIS database support.

Total 9083**B. Other Program Funding Summary:** N/A

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DATE
June 2001BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA6 - Management Support0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)PROJECT
O49

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
O49 JOINT POINT TEST	1540	1517	3008							

A. Mission Description and Budget Item Justification:

Project O49 JOINT POINT TEST: The objectives of the Joint Point Test program are to plan, conduct, evaluate, and report on joint tests (for other than developmental hardware) and accomplish operational research assessments in response to requirements received from the Commanders in Chief (CINCs) and the Services. This program will provide ongoing input to the CINC's and Services for development of doctrine, policy, training procedures, and feedback into the Research, Development, Testing & Evaluation (RDT&E) cycle.

FY 2000 Accomplishments:

- 614 Conducted assessments evaluating performance and procedures in a chemical environment. Efforts initiated addressed Field Laundry Aeration for JSLIST garment, mitigation of CW/BW effect on unprotected civilians during noncombatant operations and effects of chemical warfare on airbase operations and impact of sortie generation.
- 610 Conducted field trials evaluating performance and procedures in a chemical environment. Field tests conducted were, CW impact on Sea Ports of Debarkation and VX Chemical Agent Simulant performance.
- 316 Conducted laboratory tests evaluating performance and procedures in a chemical environment. Laboratory testing conducted supported the Sea Ports of Debarkation field testing and field laundry aeration assessment for JSLIST garment.

Total 1540

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

O49**FY 2001 Planned Program:**

- 575 Conduct assessments evaluating performance and procedures in a chemical environment. Planned efforts are to address decontamination of strategic and tactical aircraft, casualty decontamination procedures and noncombatant evacuation operation respiratory protection.
- 616 Conduct field trials evaluating performance and procedures in a chemical environment. Field trials planned are effectiveness of transload operations, noncombatant evacuation operations, and cargo aircraft contamination control.
- 300 Conduct laboratory tests evaluating performance and procedures in a chemical environment. Laboratory tests planned are protective mask fit factor for BW, noncombatant evacuation operations materiel support, and industrial hygiene equipment evaluation.
- 26 SBIR

Total 1517**FY 2002 Planned Program:**

- 41 Conduct assessments evaluating performance and procedures in a chemical environment. Planned assessment is casualty decontamination procedures.
- 2471 Conduct field trials evaluating performance and procedures in a chemical environment. Field trials to be conducted are casualty decontamination procedures, contamination control and toxic free area operations, and cargo aircraft contamination control.
- 150 Conduct Technical Data Source Book Update. Incremental update of data and information generated from on going Project O49 activity.

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BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605384BP CHEMICAL/BIOLOGICAL DEFENSE
(MANAGEMENT SUPPORT)**

PROJECT

O49**FY 2002 Planned Program (Cont):**

- 150 Conduct CB Joint Technical Information Center Research. The library responds to inquiries from the field. The new proposed requirements are received by Project O49, and undergoes the following process: Initial Evaluation, Literature Search, and if the request has already been evaluated, a letter response is sent to the requester with the results of the evaluation. If the request has not been examined, further assessment is given to the request to determine if modeling, a field test, a laboratory test, and/or a chamber test is merited.
- 196 Conduct laboratory tests evaluating performance and procedures in a chemical environment. Laboratory tests planned will address Live Bio Test on Material Surfaces.

Total 3008**B. Other Program Funding Summary:** N/A

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support**

0605502BP SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate							
Total Program Element (PE) Cost	5938	0	0							
SB6 SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)	5938	0	0							

A. Mission Description and Budget Item Justification: The overall objective of the Chemical/Biological Defense (CBD) SBIR program is to improve the transition or transfer of innovative CBD technologies between Department of Defense (DoD) components and the private sector for mutual benefit. The CBD program includes those technology efforts that maximize a strong defensive posture in a biological or chemical environment using passive and active means as deterrents. These technologies include chemical and biological detection; information assessment, which includes identification, modeling, and intelligence; contamination avoidance; and protection of both individual soldiers and equipment.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support**

0605502BP SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)

B. <u>Program Change Summary:</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
FY 2001 President's Budget	0	0	0	
Appropriated Value	0	0	0	
Adjustment to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	0	0	
b. SBIR/STTR	5938	0	0	
c. Omnibus or Other Above Threshold Reductions	0	0	0	
d. Below Threshold Reprogramming	0	0	0	
e. Rescissions	0	0	0	
Adjustments to Budget Years Since FY 2001 PB	0	0	0	
FY2002/2003 Budget Estimate Submission	5938	0	0	

Change Summary Explanation:

Funding:

Schedule:

Technical:

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE
June 2001BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA6 - Management SupportPROJECT
0605502BP SMALL BUSINESS INNOVATIVE
RESEARCH (SBIR) SB6

COST (In Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate						
SB6	SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)	5938	0	0						

A. Mission Description and Budget Item Justification:

Project SB6 SMALL BUSINESS INNOVATIVE RESEARCH (SBIR): The SBIR Program is a Congressionally mandated program established to increase the participation of small business in federal research and development (R&D). Currently, each participating government agency must reserve 2.5% of its extramural R&D for SBIR awards to competing small businesses. The goal of the SBIR Program is to invest in the innovative capabilities of the small business community to help meet government R&D objectives while allowing small companies to develop technologies and products which they can then commercialize through sales back to the government or in the private sector.

The Small Business Technology Transfer (STTR) Program like SBIR, is a government-wide program, mandated by the Small Business Research and Development Enhancement Act of 1992, PL 102-564. STTR was established in FY94 as a three-year pilot program. In early 1996, the General Accounting Office conducted a comprehensive review of the Government-wide STTR Program to determine the effectiveness of the pilot program. Upon review of the GAO report, Congress voted to reauthorize the STTR Program to the year 2000, consistent with the authorization period for the SBIR Program.

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605502BP SMALL BUSINESS INNOVATIVE
RESEARCH (SBIR)**

PROJECT

SB6

STTR was established as a companion program to the SBIR Program and is executed in essentially the same manner; however there are several distinct differences. The STTR Program provides a mechanism for participation by university , federally-funded research and development centers (FFRDCs), and other non-profit research institutions. Specifically, the STTR Program is designed to provide an incentive for small companies and research at academic institutions and non-profit research and development institutions to work together to move emerging technical ideas from the laboratory to the marketplace to foster high-tech economic development and to advance U.S. economic competitiveness. Each STTR proposal must be submitted by a team which includes a small business (as the prime contractor for contracting purposes) and at least one research institution, which have entered into a Cooperative Research and Development Agreement for the purposes of the STTR effort. Furthermore, the project must be divided up such that the small business performs at least 40% of the work and the research institution(s) performs at least 30% of the work. The remainder of the work may be performed by either party or a third party. The budget is separate from the SBIR budget and is significantly smaller (0.15% of the extramural R&D budget vs. 2.5% for the SBIR Program).

The Department of Defense (DoD) has consolidated management and oversight of the Chemical and Biological Defense (CBD) program into a single office within the Office of the Secretary of Defense (OSD). The Army was designated as the Executive Agent for coordination and integration of the CBD program. The executive agent for the SBIR/STTR portion of the program is the Army Research Office-Washington.

The overall objective of the CBD SBIR/STTR program is to improve the transition or transfer of innovative CBD technologies between DoD components and the private sector for mutual benefit. The CBD program includes those technology efforts that maximize a strong defensive posture in a biological or chemical environment using passive and active means as deterrents. These technologies include chemical and biological detection; information assessment, which includes identification, modeling, and intelligence; contamination avoidance; and protection of both individual soldiers and equipment.

FY 2000 Accomplishments:

- 5938 SBIR - Conducted Chemical and Biological Defense SBIR research and development efforts.

Total 5938

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June 2001

BUDGET ACTIVITY

**RDT&E DEFENSE-WIDE/
BA6 - Management Support****0605502BP SMALL BUSINESS INNOVATIVE
RESEARCH (SBIR)**

PROJECT

SB6**FY 2001 Planned Program: No planned program****FY 2002 Planned Program: No planned program****B. Other Program Funding Summary: N/A**